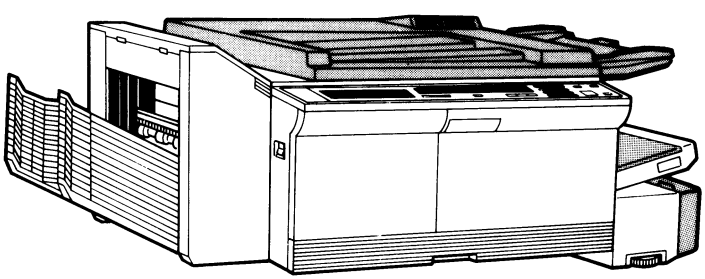
RICOH

FT4480

FIELD SERVICE MANUAL



RICOH COMPANY, LTD.

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SECTION 1

INSTALLATION

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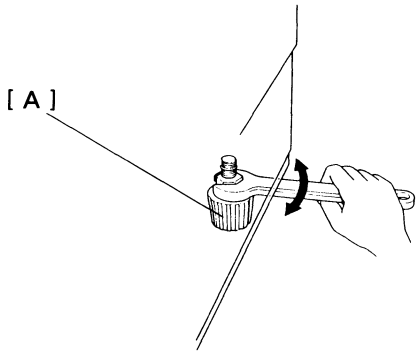
1. ENVIRONMENT

1. Temperature Range: 10°C to 30°C (50°F to 86°F)
2. Humidity Range: 15% to 90% RH
3. Ambient Illumination: Less than 1,500 lux (Do not expose to direct sunlight.)
4. Ventilation: Room air should turn over at least 3 times/hour.
5. Ambient Dust: Less than 0.15 mg/m^3 (4×10^{-3} oz/yd^3)
6. Room Size: More than 10 m^3 (13.4 yd^3)
7. If the installation place is air-conditioned or heated, place the machine:
   a. Where it will not be subjected to sudden temperature changes.
   b. Where it will not be directly exposed to cool air from an air conditioner in the summer.
   c. Where it will not be directly exposed to reflected heat from a space heater in winter.
8. Avoid placing the copier in an area filled with corrosive gas.
9. Avoid any area higher than 2,000 meters (6,500 feet) above sea level.
10. Place the copier on a strong and level base.
11. Avoid any area where the copier may be subjected to frequent strong vibration.

2. MACHINE LEVEL



1. Front to back: Within 5 mm (0.2") of level
2. Right to left: Within 5 mm (0.2") of level

Place the machine on a table and screw the leveling foots [A] up or down to level the machine.
Use a leveling gauge if necessary.

3. MINIMUM SPACE REQUIREMENT

1. Front: 70 cm (27.6")
2. Back: 10 cm (3.9")
3. Right: 80 cm (31.5")
4. Left : 10 cm (3.9")

4. POWER REQUIREMENT

1. Input voltage level

   110V/60Hz : More than 15A
   115V/60Hz : More than 15A
   220V/50Hz : More than 8A
   220V/60Hz : More than 8A
   240V/50Hz : More than 8A

2. Permissible voltage fluctuation: ± 10%

3. Permissible extension cord: At least 300V, 30A capacity and less than 5 meters (16.4 ft) long.

4. Do not set anything on the power cord.

NOTE: - Be sure to ground the machine. (Do not connect the grounding wire to a gas pipe.)
- Make sure the plug is firmly inserted in the outlet.
- Avoid multi-wiring.

5. COPIER INSTALLATION

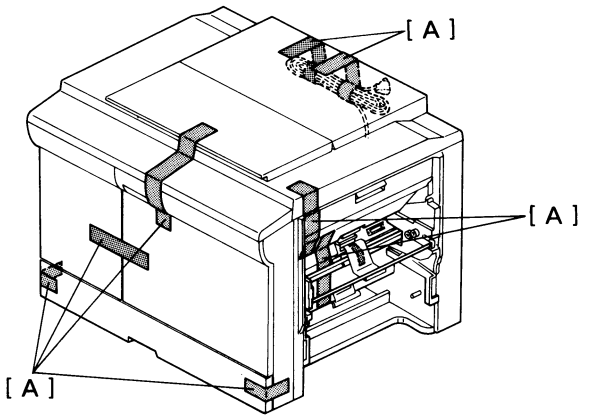
- ACCESSORY CHECK -

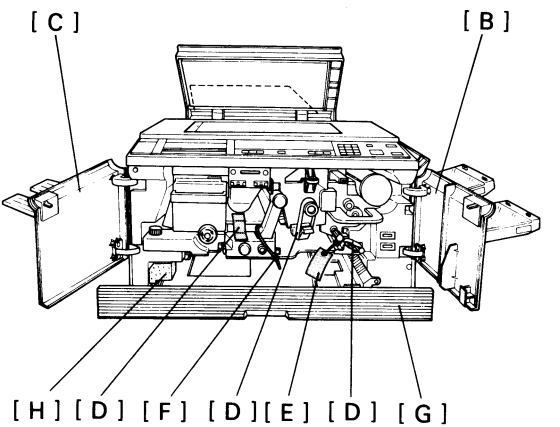
Check the quantity and condition of the accessories in the box according to the following list.

DESCRIPTION	Q'TY
1. Installation Procedure (115V - English only. 220V/240V - five languages)	1
2. New Equipment Condition Report	1
3. Envelope - NECR (115V only)	1
4. Cassette - Large	
America, Europe, Middle East, Philippines	1
The Rest of Asia,	2
5. Cassette - Small	
America, Europe, Middle East, Philippines, Taiwan	2
The Rest of Asia	1
6. Receiving tray	1
7. Original holder	1
8. Operating instructions (115V - English only. 220V/240V - five languages)	1
9. Operating instruction cards (115V - English only. 220V/240V - five languages)	1
10. Multilingual decals (220/240V only)	1
11. Sort/Stack key top (attached on the right inner cover)	1
12. Sort/Stack key cover (attached on the right inner cover)	1
13. Editing Sheet	1

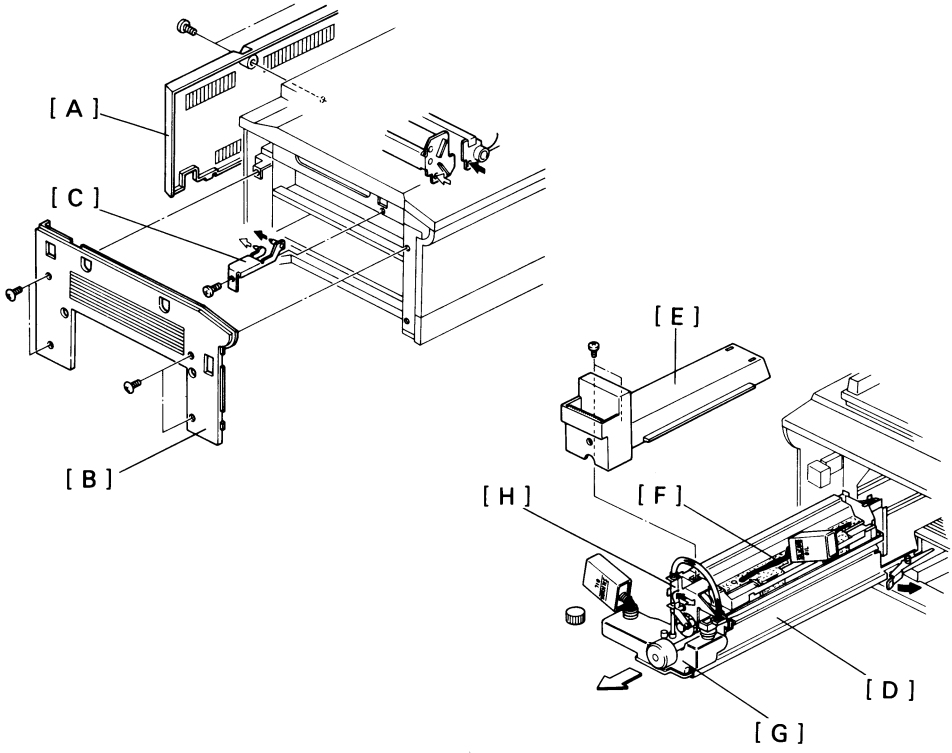
NOTE: Save the Sorter/Stack key top and cover for Sorter installation.

- INSTALLATION PROCEDURE -





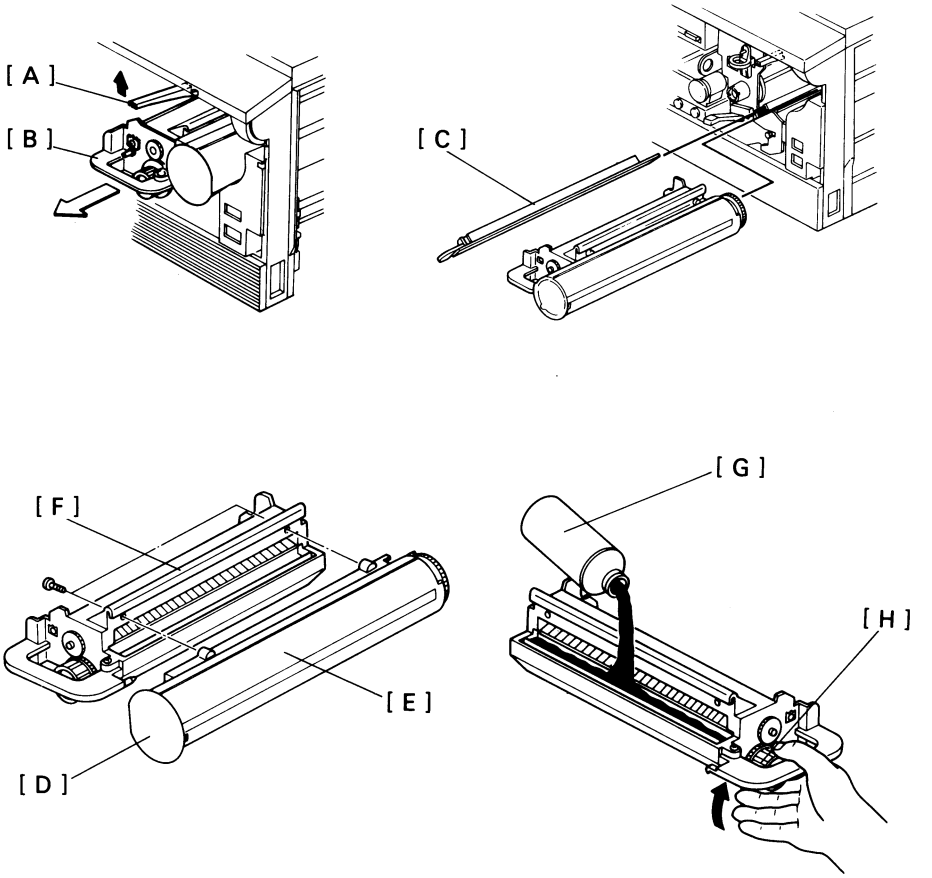
1. Remove the shipping tapes [A] from the copier as shown.
2. Open the copier right [B] and left front door [C], remove the shipping tape [D] and the wedge [E] between the registration rollers, and cut the cable tie [F] securing the toner collection bottle as shown.
3. Pull out the cassette tray [G].
4. Remove the foam rubber [H].



5. Remove the rear cover [A] (2 screws).
6. Remove the left cover [B] (4 screws).
7. Remove the scanner lock plate [C] (1 screw).

   NOTE: Save the scanner lock plate for future use.

8. Reinstall the left cover and rear cover.
9. Pull out the fusing unit [D] to the lock position and remove the fusing unit cover [E] (2 screws).
10. Prime the oil supply pad [F] with silicone oil.
11. Fill the oil tank [G] with silicone oil.
12. Manually operate the oil pump lever [H] and confirm the proper operation and condition of the silicone oil supply system.
13. Reassemble the fusing unit and return it to its original position.



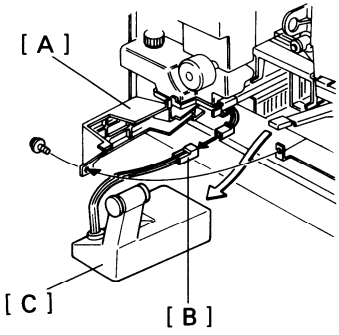
14. Raise the development lock lever [A] and pull out the development unit [B] and the PTL board [C]. Place the unit on a clean sheet of paper.

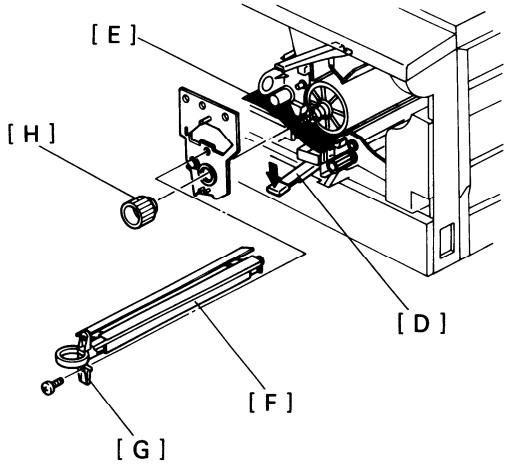
15. Remove the seal [D] from the toner tank.

16. Separate the toner tank [E] from the development unit [F] (2 screws).

17. Pour one bottle of developer [G] into the development unit while turning the knob [H] counterclockwise to distribute the developer.

18. Remount the toner tank on the development unit.





19. Swing the toner collection bottle cover [A] to the left (1 screw) and unplug the toner overflow sensor connector [B].

20. Remove the toner collection bottle [C].

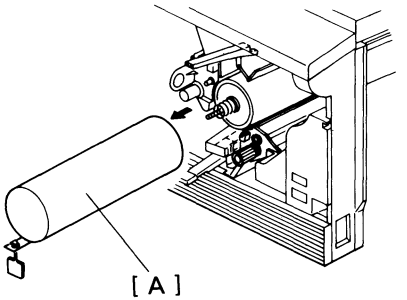
21. Lower the T/S corona unit [D].

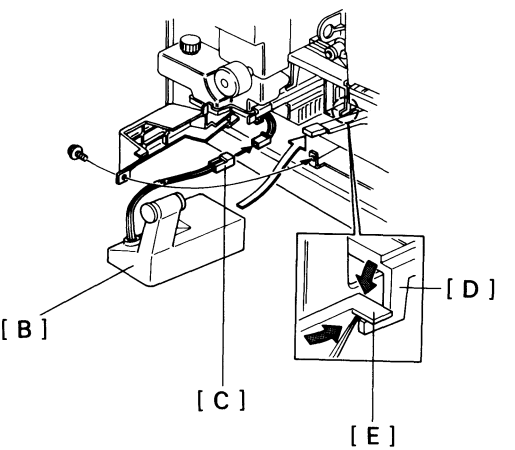
22. Place a sheet of paper [E] over the T/S corona unit.

23. Remove the charge corona unit [F] together with the wire cleaner [G] (1 screw).

24. Remove the drum stay [I] (1 knob and 1 screw).

NOTE: The drum stay knob [H] is reverse threaded.





25. Pull out the drum protective sleeve [A].

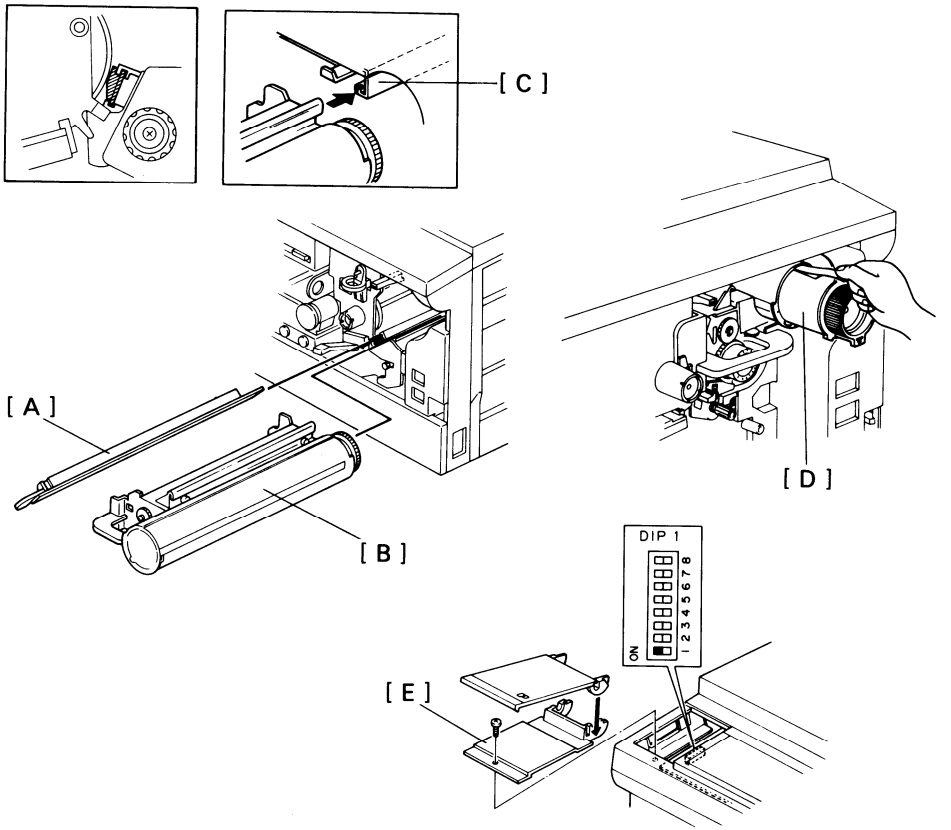
NOTE: Save the drum protective sleeve for future use when servicing the copier.

26. Make sure that the wire cleaner is properly positioned, then reinstall the drum stay and the charge corona unit.

27. Remove the paper over the T/S corona unit and return the T/S corona unit to its original position.

28. Reinstall the toner collection bottle [B] and plug in the toner overflow sensor connector [C].

29. Make sure that the hooks of the transport plate [D] are positioned underneath the bottle cover [E], then reinstall the toner collection bottle cover [F] (1 screw). Close the cassette tray.



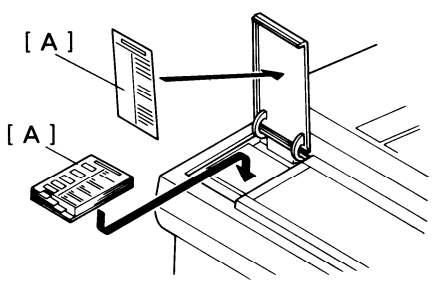
30. Reinstall the PTL board, then reinstall the development unit.

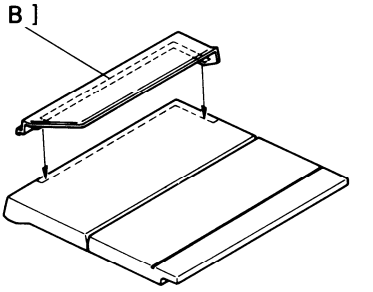
CAUTION: When installing the PTL board [A], be sure that the PTL board is properly positioned in the rail. When installing the development unit [B], be sure the development unit rail is properly engaged with the unit guide rail [C] on the copier.

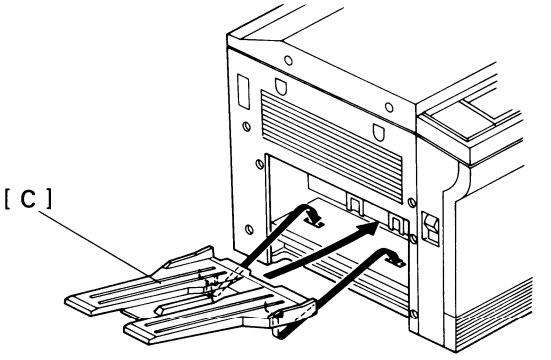
31. Install one toner cartridge [D].

NOTE: Confirm that the toner cartridge gear is properly engaged by attempting to rotate the cartridge counterclockwise.
When the toner cartridge gear is properly engaged, the toner cartridge will not rotate freely.

32. Remove the DIP switch cover [E] on the left side of the operation panel (1 screw) and turn on DIP switch No. 1 - 1.







33. Lower the platen cover.

34. Plug in the machine and turn on the main switch.

35. After the warm up period is completed, enter 99 copies and press the Start Key for drum conditioning.

36. After the machine stops, turn off the main switch.

37. Turn off DIP switch No. 1 - 1 and reinstall the DIP switch cover.

38. Install the operating instruction cards [A] over the DIP Switch cover as shown (double-sided tape).

39. Install the original holder [B] on the platen cover as shown and install the receiving tray [C].

40. Load paper into the cassette and check machine operation and copy quality.

41. Fill out the New Equipment Condition Report.

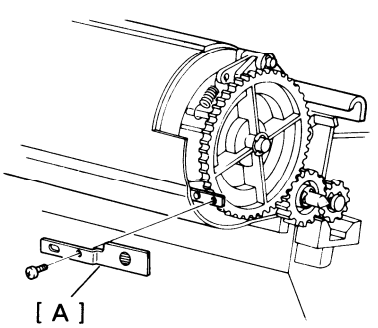
6. COLOR DEVELOPMENT UNIT INSTALLATION

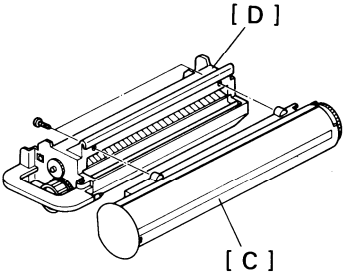
- ACCESSORY CHECK -

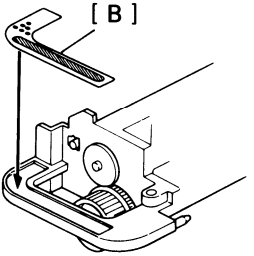
Check the quantity and condition of the accessories in the box according to the following list.

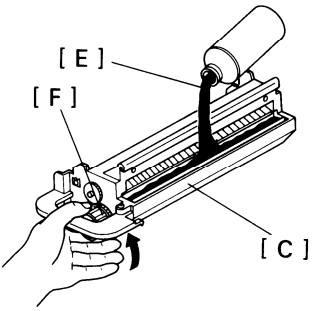
1. Actuator - Red	1
2. Actuator - Blue	1
3. Actuator - Green	1
4. Screw - M3x4	1
5. Color Decal Sheet	1

- INSTALLATION PROCEDURE -









NOTE: - **The color development unit should be installed after drum conditioning is finished. (See the copier installation procedure.)**

- **The following procedure should be done when the color developer is replaced.**

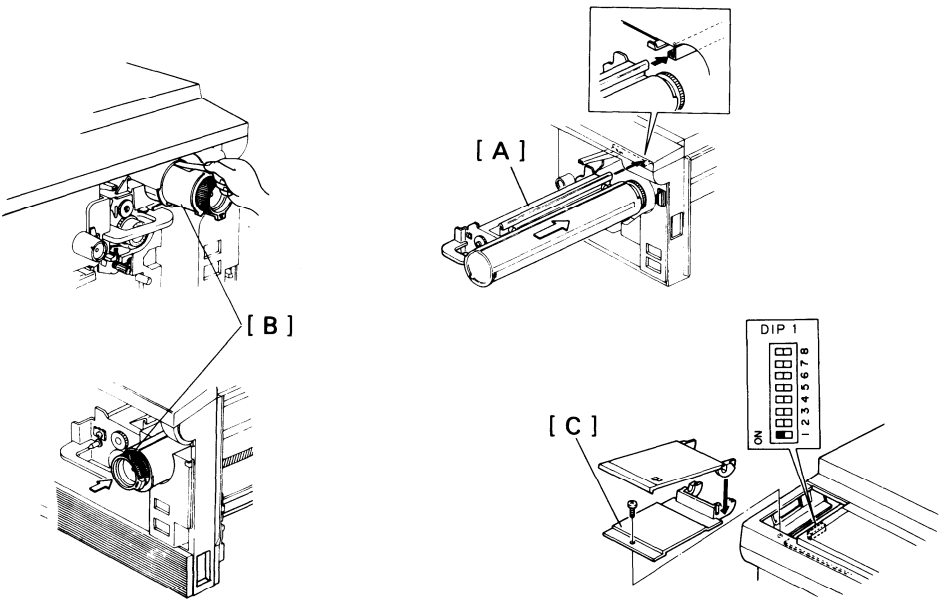
1. Install the color actuator [A] on the color development unit (1 screw).

   NOTE: Each actuator has a colored sticker. Install the appreciate actuator.

2. Stick the appreciate decal [B] on the development unit handle.

3. Separate the toner tank [C] from the development unit [D] (2 screws).

4. Pour one bottle of color developer [E] into the development unit while turning the knob [F] counterclockwise to distribute the developer.



5. Remount the toner tank on the development unit.

CAUTION: **When installing the color development unit, be sure the development unit rail is properly engaged with the unit guide rail on the copier.**

6. Install a color development unit [A].

7. Install the color toner cartridge [B].

8. Remove the DIP SW cover [C] on the left side of the operation panel (1 screw) and turn on DIP SW No. 1 - 1.

9. Plug in the machine and turn on the main switch. Confirm that the Color Toner indicator is displayed on the operation panel.

10. Press the Enter key. “20” will be displayed on the copy counter.

11. Put five sheets of white paper (A3 or 11”x17”) on the exposure glass.

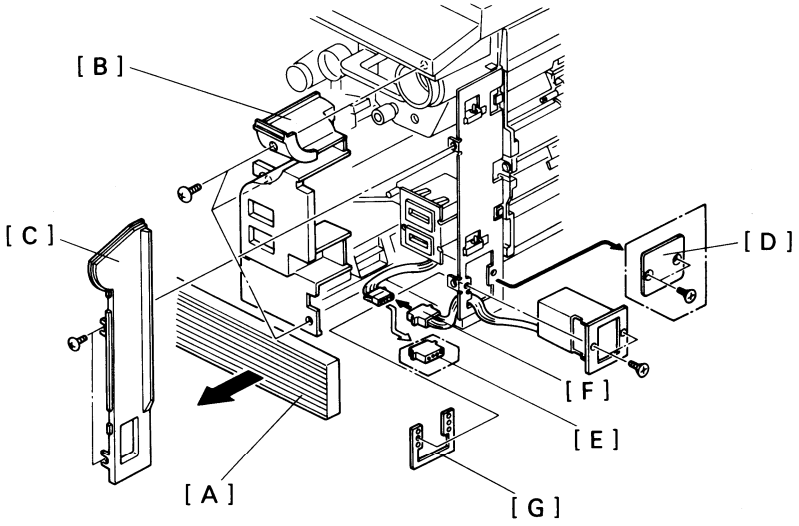
12. Lower the platen cover.

13. After the warm up period is completed, press the Start key.

14. After the machine stops, turn off the main switch and the DIP SW No. 1 - 1.

15. Reinstall the DIP SW cover (1 screw).

7. KEY COUNTER HOLDER INSTALLATION



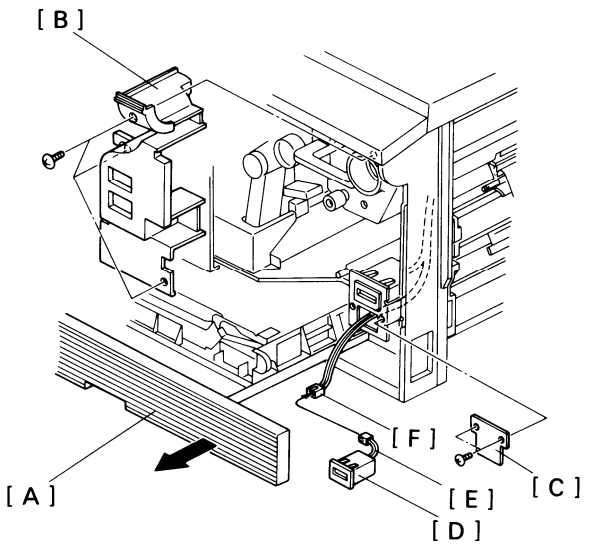
NOTE: Three types of counters are recommended for this copier (Ricoh, Hecon, and Hengstler key counters).

1. Open the right front door.
2. Pull out the cassette tray [A].
3. Remove the right inner cover [B] (3 screws).
4. Remove the right front door.
5. Remove the front right side cover [C] (2 screws).
6. Remove the cover plate [D] (2 screws).
7. Remove the shorting plug [E] from the 4p key counter connector.
8. Connect the 4p connector of the key counter holder [F] to the key counter harness through the key counter access hole.
9. Hold the fixing plate on the inside of the key counter bracket [G] and insert the key counter holder.
10. Align the holes in the fixing plate with the mounting holes of key counter holder and secure the key counter holder.

    NOTE: The fixing plate has three sets of holes. Make sure to use the holes that match the type of counter when installing.

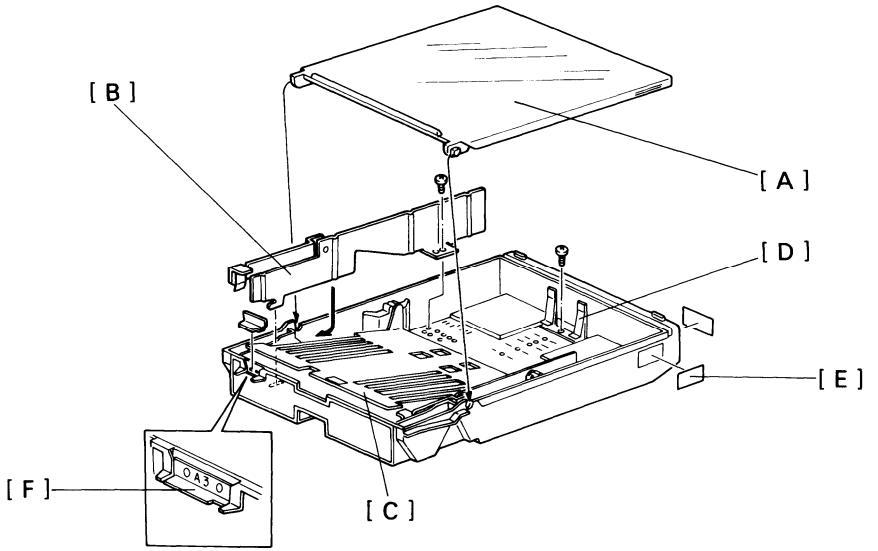
11. Reinstall all covers.

8. A3/11"X17" COUNTER INSTALLATION



1. Open the right front door.
2. Pull out the cassette tray [A].
3. Remove the right inner cover [B] (3 screws).
4. Remove the A3/11"X17" counter cover plate [C] (2 screws).
5. Push the A3/11"X17" counter [D] into the space provided until it locks.
6. Connect the 2p connector [E] on the A3/11"X17" connector to the counter harness [F].
7. Reinstall the right inner cover.

9. CASSETTE MODIFICATION



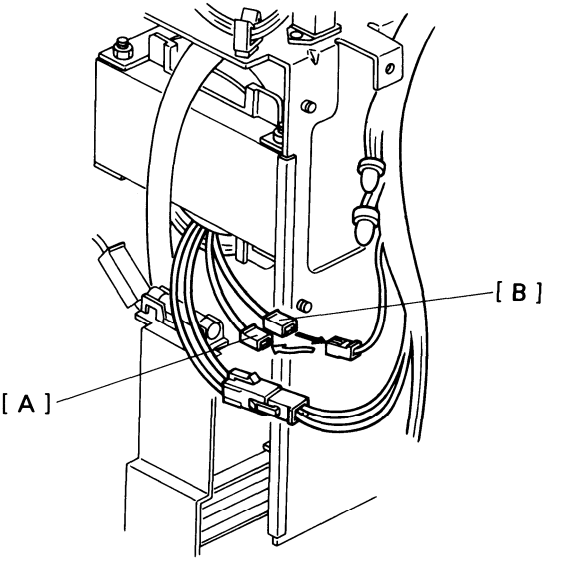
1. Remove the cassette cover [A].
2. Remove the side fences [B] (1 screw each) and the bottom plate [C].
3. Reposition the rear fence [D] in the desired paper size position (1 screw).

   NOTE: Paper size positions are shown on the inside of the cassette.

4. Reinstall the bottom plate.
5. Reinstall the side fences in the desired paper size position.
6. Attach the proper paper size decals [E] on the cassette at the positions shown.
7. Insert the actuator plate [F] in the slot on the front of the cassette as shown.

   NOTE: The actuator plates are enclosed in the cassettes.
   Save the other actuator plates for future use.

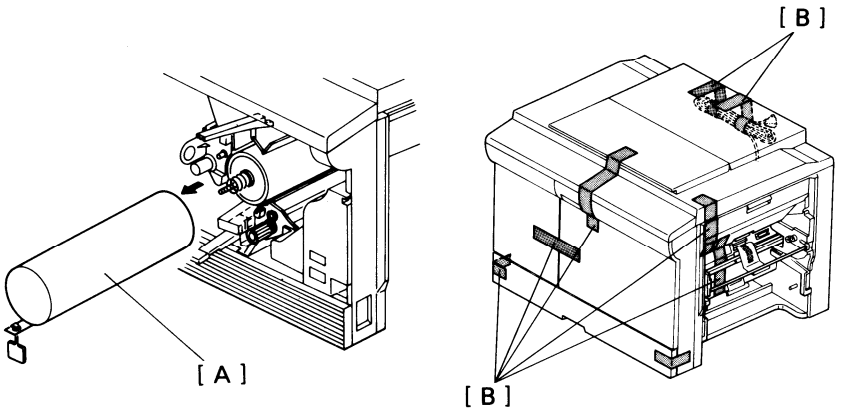
10. MODIFYING MAIN TRANSFORMER VOLTAGE (220V TO 240V)



1. Remove the rear cover (2 screws).
2. Disconnect the 220V connector [A] (White:1P).
3. Connect the 240V connector [B] (Red:1P).
4. Reinstall the rear cover.

11. PREPARATION FOR TRANSPORTING THE COPIER

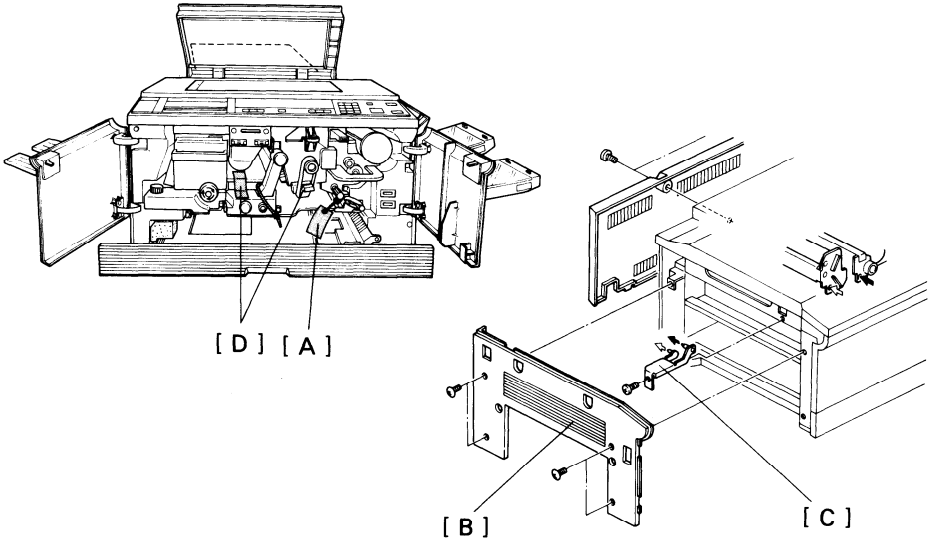
- SHORT HAUL TRANSPORTATION -



The copier may be seriously damaged if it is moved without proper preparation. Before moving the copier from its place of installation, be sure to prepare it for transportation as follows:

1. Insert the drum protective sleeve [A].
2. Re-install the development unit.
3. Re-install the drum stay and charge corona unit.
4. Secure the following items with tape [B]:
   - Manual feed table
   - Platen cover or document feeder
   - Power supply cord (roll up first)
   - Cassette tray front cover
5. Remove the sorter to prevent damage to the bins.
6. Remove the cassettes.
7. Remove the original table from the document feeder.
8. Remove the LCT if it is installed in the 2nd feed station.

- LONG HAUL TRANSPORTATION BY VEHICLE -



If the machine is to be transported by vehicle, do the following steps after you have completed the short haul procedure.

1. Remove the developer from the development unit.
2. Place a wedge [A] between the registration rollers.
3. Remove the left cover [B] and install the scanner lock plate [C].

   NOTE: Confirm that the scanner is at the home position.

4. Secure the following items with tape [D]:

   - T/S corona release lever to the drum stay knob
   - Transport plate to the toner collection bottle cover
   - 1st and 2nd feed guide plates

5. Remove the sorter and secure the following items with tape:

   - Top cover
   - Jam clearing tray
   - Bins--tape the right and left edges of the spacers together.

6. Secure the LCT covers and power supply cord with tape.

SECTION 2

SERVICE TABLES

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SERVICE TABLE

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SERVICE REMARKS 2-14

SPECIAL TOOLS AND LUBRICANTS 2-20

PM TABLE

C: Clean R: Replace L: Lubricate

ITEM	EM	60K	120K	180K	240K	NOTES
OPTICS						
1. Mirrors, lens, reflectors, toner shield glass, ADS sensor	C	C	C	C	C	Silicone cloth or water (cotton pad), blower brush
2. Exposure glass	C	C	C	C	C	Alcohol or water
2. Platen cover sheet	C	C	C	C	C	Alcohol or water (replace if necessary)
4. Scanner guide rod and plate		L	L	L	L	Launa oil or equivalent
5. Guide rod felt		L	L	L	L	Launa oil or equivalent
PAPER FEED						
6. Paper feed roller	C		R		R	Water
7. Friction pad	C		R		R	Water
8. Paper feed guide plate		C	C	C	C	
9. Registration sensor		C	C	C	C	Blower brush
10. Cassette bottom plate pad		C	C	C	C	Alcohol or water
11. Paper feed sensor		C	C	C	C	Blower brush
AROUND DRUM						
12. Corona wires	C		R		R	Dry cloth
13. Wire cleaner		R	R	R	R	
14. End blocks and casing	C	C	C	C	C	Dry cloth
15. Transfer guide plate		C	C	C	C	Dry cloth
16. Pre-Transfer Lamp	C	C	C	C	C	Dry cloth, discharge before installation.
17. Quenching Lamp	C	C	C	C	C	Dry cloth, discharge before installation.
18. ID sensor	C	C	C	C	C	Blower brush
19. Erase lamp unit		C	C	C	C	Dry cloth
CLEANING UNIT						
20. Cleaning blade		R	R	R	R	Dust with setting powder
21. Cleaning seal		C	C	C	C	Replace if necessary
22. Cleaning brush			R		R	Dust with setting powder
23. Cleaning unit		C	C	C	C	
24. Pick-off pawls	C	C	C	C	C	Replace if necessary
25. Used toner bottle	C	C	C	C	C	Empty of used toner

C: Clean R: Replace L: Lubricate A: Add I: Inspect

ITEM	EM	60K	120K	180K	240K	NOTES
DEVELOPMENT UNIT						
26. Developer		R	R	R	R	If necessary
27. Upper brush seal		C	C	C	C	
28. Side seals		C	C	C	C	
29. Development unit guide		C	C	C	C	
30. Toner supply clutch			L		L	Mobil Temp 78
FUSING UNIT						
31. Hot roller		C	R	C	R	
32. Pressure roller		C	R	C	R	If necessary
33. Stripper pawls		C	C	C	C	Replace if necessary
34. Oil supply pad		R	R	R	R	Prime with silicone oil
35. Oil blade		C	R	C	R	Prime with silicone oil
36. Fusing entrance and exit guides		C	C	C	C	Suitable solvent
37. Oil sump		C	C	C	C	
OTHERS						
38. Main drive chain			L		L	Spindle oil
39. Transport belt		C	C	C	C	Alcohol or water
40. Bushings			L		L	Spindle oil
DOCUMENT FEEDER						
41. Belt	C	C	C	C	C	Belt cleaner, replace if necessary
42. Pick-up roller	C	C	C	C	C	Water, replace if necessary
43. Feed roller	C	C	C	C	C	Water, replace if necessary
44. Friction roller	C	C	C	C	C	Water, replace if necessary
LARGE CAPACITY TRAY						
45. Pick-up roller	C		R		R	Water

SERVICE TABLES

1. Test Points

- MAIN BOARD -

NUMBER	FUNCTION
TP201	GND
TP202	+5V (Vc)
TP203	+24V (VA)
TP204	Factory Use
TP205	+12V (Vs)
CN212-1	ADS Voltage (Adjust using VR2 on the lamp regulator)
CN209-1	Input voltage of image density sensor (Adjust using VR201 on the main board)

- DF MAIN BOARD -

NUMBER	FUNCTION
TP101	GND
TP102	+24V (VA)
TP103	+12V (Power for motor control IC)
TP104	+5V (Vc)
TP105	Belt drive motor encoder pulse

2. Variable Resisters

- MAIN BOARD -

NUMBER	FUNCTION
VR201	Adjust the image density sensor voltage

- LAMP REGULATOR -

NUMBER	FUNCTION
VR1	Light adjustment
VR2	ADS input adjustment
VR3	Factory Use

- DF MAIN BOARD -

NUMBER	FUNCTION
VR101	Registration adjustment (0 ± 2.5 mm)
VR103	Belt drive motor speed adjustment (2,500 ± 30 rpm)
VR104	Original entrance sensor output (IC 116-5 > +8V : With paper) (IC 116-5 < +4V : Without paper)
VR105	Original width sensor output (IC 116-7 > +8V : With paper) (IC 116-7 < +4V : Without paper)

3. Dip Switches

- Main Board -

DIP 101

DIP SWITCH	NORMAL	FUNCTION
101-1	---	Lead edge registration adjustment
101-2	---	Lead edge registration adjustment
101-3	---	Lead edge registration adjustment
101-4	---	Lead edge registration adjustment
101-5	---	Lead edge blank margin adjustment
101-6	---	Lead edge blank margin adjustment
101-7	---	Lead edge blank margin adjustment
101-8	---	Lead edge blank margin adjustment

(Lead edge regist./blank margin adjustment interval = 1.0 mm per step. See the adjustment procedure.)

DIP 102

DIP SWITCH	NORMAL	FUNCTION
102-1	OFF	Scanner free run
102-2	---	Vertical magnification adjustment
102-3	---	Vertical magnification adjustment
102-4	---	Vertical magnification adjustment

(Vertical magnification adjustment interval = 0.2% per step. See the vertical magnification adjustment procedure.)

DIP 201

DIP SWITCH	NORMAL	FUNCTION
201-1	OFF	Toner supply mode (ON: fixed, OFF: detect)
201-2	ON	Toner supply amount (Note 1)
201-3	OFF	Toner supply amount (Note 1)
201-4	OFF	Image density adjustment (Note 2)
201-5	ON	Image density adjustment (Note 2)
201-6	OFF	Increase bias (+30 V; Color)
201-7	OFF	Increase bias (+90 V)
201-8	OFF	ID sensor LED ON

NOTE 1: Dip SW 201-1, 2, 3

201-2	201-3	Detect Mode (201-1 OFF)	Fixed Mode (201-1 ON)
OFF	OFF	15%	3.5%
ON	OFF	30%	7.0%
OFF	ON	45%	10.5%
ON	ON	60%	14.0%

NOTE 2: Dip SW 201-4, 5

201-4	201-5	Image Density	ID sensor Bias
OFF	OFF	Light (least toner)	470V
ON	OFF	Lighter (less toner)	440V
OFF	ON	Normal	500V
ON	ON	Dark {more toner)	530V

DIP 202

DIP SWITCH	NORMAL	FUNCTION
102-1	OFF	Sorter instructions
102-2	OFF	Auto cassette shift disable
102-3	OFF	Not used
102-4	OFF	Not used

- Operation Panel -

DIP 1

DIP SWITCH	NORMAL	FNUCTION
1-1	OFF	Drum conditioning
1-2	OFF	Free run
1-3	OFF	Jam detection disable
1-4	OFF	Auto reset disable
1-5	OFF	Beeper sound disable
1-6	OFF	Copy counter count up/down (ON: down, OFF: up)
1-7	OFF	Manual image density mode priority (ON: manual mode, OFF: ADS mode)
1-8	OFF	SP Mode

- DF Main Board -

DIP 101

101-1	101-2	101-3	101-4	FUNCTION
ON	OFF	OFF	OFF	Normal mode
ON	OFF	OFF	OFF	Free run
ON	ON	OFF	ON	Belt speed adjustment (VR103)
ON	ON	ON	ON	All indicator on

4. Service Program Mode (SP Mode) Operation

The service program mode is used to check and change electrical data or adjustment values by the service engineer.

- DATA CHANGE MODE -

1. Remove the DIP SW cover and turn on DIP SW1-8 on the operation panel. (The Service Call indicator will start blinking.)
2. Enter the desired SP Mode No. using the numeral keys.
   (The entered No. is displayed in the copy counter.)
3. Press the Enter key.
   (The SP Mode No. is shifted into the Magnification indicator and the actual data is displayed in the copy counter.)
4. If the data is correct, press the Enter key.
5. Enter the desired data using numeral keys.
   (The data entered is displayed in the copy counter.)
6. Press the Enter key to memorize the new data.
   (The copy counter indicates “1”, the Ready indicator turns on and the Start key turns green.)
7. Turn off the DIP SW1-8.
   (The Service Call indicator goes off.)

- DATA CHECK MODE -

1. Perform the steps 1 and 2 of the data change mode.
2. Press the Enter key.
   (The data is displayed in the Magnification indicator.)
3. Perform the adjustment procedure for the SP Mode No.55 and 56. if necessary.
4. Turn off the DIP SW 1-8.

NOTE: - The SP Mode can be cleared by pressing the Clear mode key or turning off the main switch.

5. Service Program Mode Table

Mode No.	Function	Data	Factory Setting	Remarks
5 Exposure Lamp OFF	Exposure lamp ON/OFF	0: ON 1: OFF	0	
9 ADS	ADS voltage adjustment	-	-	For use with SP Mode "56". Refer to the ADS adjustment procedure.
11 All Indicators ON	Turns on allindicators on the operation panel.	-	-	
15 Auto Reset Time	Selects auto reset of 1 or 3 minutes.	0: 1 min. 1: 3 min.	0	Auto Reset time can be switched OFF by DIP SW 1-40N.
20 Feed Station Priority (LCT)	Selects feed station priority.	0: LCT 1: SP 22	0	Refer to the NOTE 1.
21 APS Priority	Selects APS or manual.	0: APS 1: Manual	0	If DF is installed.
22 Feed Station Priority (1st, 2nd, and 3rd cassette)	selects feed station priority.	0: 1st 1: 2nd 2: 3rd	0	Refer to the NOTE 1.
23 DF Original Size	Enables originals of various sizes to be fed from the same stack.	0: OFF 1: ON	0	ADF Mode only.

Mode No.	Function	Data	Factory Setting	Remarks
28 Auto Sort Mode	Selects Sort Mode automatically in ADF mode.	0: Manual 1: Auto	0	Sorter and DF must be installed.
29 Fusing Unit Idle	Selects fusing unit idling mode	0: No idling 1: idling	0	Copier will idle for 10 seconds. Refer to the NOTE 3.
35 Toner Supply	Changes toner supply interval. a) ID sensor checks every 5 copies. b) Toner end level changes to 0.65V.	0: Standard 1: Increase	0	Standard: Every 10 copies, 0.75V.
49 Fusing Temperature Change	Changes fusing temp.	0: Standard 1: Low 2: Higher 3: Highest	0	178 - 184° 174 - 180° 182 - 188° 186 - 192°
52 Fusing Temperature	Displays the fusing temperature.	-	-	
55 VSG, VSP Voltage	Displays VSG, VSP voltage	-	-	Press the enter key twice to Display Vsp.
56 ADS Input Referrence Voltage	Displays ADS voltage	-	-	For use with SP Mode "9". Refer to the ADS adjustment procedure.
59 Bias Voltage	Displays bias voltage	-	-	Press the Start key to indicate the voltage.
60 Toner Supply Recovery	Recover toner volume if the Vsp is above 0.5V. a) Press Start key. b) Toner supply clutch turns on. c) Free run starts. d) Vsp becomes less than 0.5V. e) Free run stops.	-	-	Use this mode if the image density is low. (Black toner only). Refer to the NOTE 2 for color toner

Mode No.	Function	Data	Factory Setting	Remarks
70 Color Toner Supply Amount	Selects the color toner supply ratio.	0: 14% 1: 7% 2: 21% 3: 28% 4: 35% 5: 42% 6: 49% 7: 56%	0	
73 Color Toner Copy Count	Shows the number of color copies made	0: Red 1: Green 2: Blue		Multiply number by 100. Example: 24 = 2400 sheets
76 Sorter Bin Capacity	Set the stack mode quantity limit.	0: No limit 1: Limit	0	Limit is determined by paper size. Refer to the NOTE 4.
93 Maximum Copy Quantity	Limits the maximum copy quantity that can be entered.	-	0 (999)	The limit quantity is displayed in the copy counter. (Refer to the NOTE 5.)
99 Clear All Memory	Clear All counters and returns all modes to factory setting.	0: Memory 1: Clear	0	DIP SW 1-1 must be ON.

NOTE 1: SP Mode No.20 and 22.

Feed Station Priority

	LCT Not Installed			LCT Installed			
SP Mode 20	x	x	x	0	1	1	1
SP Mode 22	0	1	2	x	0	1	2
First Priority	1st	2nd	3rd	2nd	1st	2nd	3rd
Second Priority	2nd	3rd	1st	3rd	2nd	3rd	1st
Third Priority	3rd	1st	2nd	1st	3rd	1st	2nd

- **If no cassettes are installed, the machine returns to the first priority setting.**
- **The "X" mark means "don't care".**
- **If a cassette is not installed or the cassette is empty, the machine selects the next priority.**

NOTE 2: SP Mode No.60.

For the color toner supply recovery, the following procedure is required:

1. Turn off the main switch and turn on DIP switch 1-2.
2. Turn on the main switch, then press the start key.
3. While pressing the enter key and the "0" key, the toner supply clutch turns on.
4. Press the Clear/Stop key and turn off the main switch, then turn off DIP switch 1 - 2.

NOTE 3: SP Mode No.29

The idling mode may be necessary if the copier has been installed in an environment with low temperature place.
The idling mode will warm up the fusing rollers enough to ensure the fusing ability at initial copy run.

Idling Mode: The copier will idle for 10 seconds only when the main switch turned on and the Start key turned on.

NOTE 4: SP Mode No.76

Paper Size	Limit Capacity
A3/DLT	10 sheets
A4/LT	30 sheets
A5/HLT	30 sheets

NOTE 5: SP Mode No.93

To change the limit quantity, perform the following:

1. Turn the DIP SW 1-8.
2. Enter “93” using the numeral keys.
3. Press the Enter key.
4. Enter a desired number using numeral keys.
5. Press the Enter key.

SERVICE REMARKS

- Handling the Drum -

1. Never touch the drum surface with bare hands.
2. Store the drum in a cool dry place.
3. Always wear gloves when cleaning the drum.
4. Prime the drum with setting powder only when installing new drum.
5. Never expose the drum to light for a long time.
6. Drum conditioning is necessary when a new drum is installed. In addition, it is useful at the following times:

   • When image density is reduced due to over-exposure of the drum.
   • After cleaning the drum.
   • When the drum is lightly scratched.

7. Always keep the drum in the protective sleeve when inserting or pulling the drum out of the copier.
8. Before inserting or pulling out the drum, the cleaning unit should be pulled slightly out to avoid drum damage by the pick-off pawls.
9. Return used drums to the distributor according to standard procedure.

- Charge Corona -

1. Clean the corona wires with a dry cloth or by sliding the corona unit in and out. Do not use emery paper or any solvent for wire cleaning.

2. Do not touch the corona wires with oily hands. Oil stains may cause white bands on copies.

3. Make sure that the corona wires are correctly positioned between the cleaner pads and there are no threads on the casing.

4. When adjusting the drum current, always make sure that the axis of drum shoe is aligned with the corona wire.

5. The corona wire height should be adjusted only when:

   a) The front end block is replaced.
   b) The drum charge current is uneven.

- Optics -

1. Do not adjust the following parts:

   a. Scanner Guide Plate
   b. Fourth Mirror Angle Adjusting Screw
   c. Lens Home Position Sensor
   d. Lens unit rails

2. The lens home position sensor does not have a convenient adjusting procedure. When replacing the sensor, mark the position of the sensor bracket before removing it, and adjust the fine position of the sensor by checking the copy image (horizontal magnification and focus).

3. Do not bend or damage the lens support plate or the mylar strip.

4. Launa oil or an equivalent oil should be used to lubricate or clean the following:

   • Scanner Guide Rod (cleaning)
   • Scanner Guide Rod Pads (Lubrication)
   • Scanner Guide Plate (Lubrication/Cleaning)

   CAUTION: Do not use any other kind of oil.

5. Clean the exposure glass with glass cleaner and a dry cloth to reduce static electricity on the glass.

6. Clean the mirrors with water or silicone cloth only.

7. Do not touch the following parts with bare hands:

   - Reflectors
   - Exposure Lamp
   - Mirrors and Lens

8. Do not bend the Auto ID fiber optics cable sharply.

9. When adjusting the light intensity, make ten copies before proceeding to check copy image if the main switch has just been turned on. This is to eliminate the effect of rest time compensation.

10. After adjusting the light intensity, check and adjust the Auto ID sensor.

- Development -

1. Be careful not to nick or scratch the development roller sleeve.

2. Place a sheet of paper under the development unit when it is out of the copier.

3. Be careful not to bend the bias terminal.

4. Clean the drive gears and end magnets after removing used developer.

5. Clean the development unit guide plate before reinstalling the unit.

- Toner Supply -

1. The image density sensor and the pre-transfer lamp unit should be cleaned with a blower brush.

2. Do not touch the sensor pattern with bare hands.

3. Image density sensor adjustment is required when:

   - The ID sensor/PTL board is replaced.
   - The main board is replaced.
   - The drum has been replaced and Vsg is out of specification.
   - Problems with toner supply have occurred and ID sensor check shows Vsg to be out of specification.

4. Grease the toner supply clutch with Mobil Temp 78 periodically to avoid noise and faulty operation.

- Transfer and Separation -

1. The corona wires should be cleaned with a dry cloth.

2. While the drum stay is out and the drum is installed on the drum guide, do not lift up the corona unit. (The corona casing will knock against the drum.)

- Cleaning -

1. When servicing, be careful not to damage the edge of the cleaning blade.

2. Do not touch the cleaning brush with your bare hands.

3. Before pulling out the cleaning unit, place a sheet of paper under it to catch falling toner.

4. Be careful not to damage the drum with the pick-off pawls when pulling out or inserting the cleaning unit.

5. When installing the toner collection bottle cover, be sure that the hooks of the transport plate are positioned underneath the bottle cover.

6. After replacing the cleaning solenoid, adjust the position of the cleaning solenoid.

- Fusing -

1. When removing the fusing unit, keep it in an up-right position so that the silicone oil does not spill.

2. After replacing the oil blade and oil supply pad, prime them with silicone oil.

3. Be careful not to damage the edge of the hot roller strippers or their tension springs.

4. Do not touch the fusing lamp with bare hands.

5. Be sure that the fusing lamp is not in contact with the inner surface of the hot roller.

6. Be sure that the oil end sensor contacts the bottom of the oil tank.

7. When the paper creasing occur, adjust the position of the entrance guide plate or fusing pressure.

- Paper Feed -

1. When replacing the friction pad, make sure that the friction pad is below the surface of the front lip of the pad holder.

2. When reinstalling the support bracket after cleaning the registration sensor, make sure that the bracket is properly engaged with the groove of the registration clutch stopper.

3. When replacing the friction pad, adjust the gap between the feed roller and the friction pad.

4. Do not touch the feed roller and the friction pad with oily hand.

- Document Feeder -

1. Do not bend the DF interface harness sharply to avoid damaging the fiber optics cables.

2. When servicing the document feeder, make sure that the main switch of the copier is off.

3. When installing or reinstalling the document feeder, make sure that the document feed is in the open position.

- Sorter -

1. The sorter has two types of bins; one type is used for odd numbered bins and the others used for even numbers. Be careful not to mix them up.

2. If bin operation is not smooth, lubricate the slot liners and transfer wheels using grease 501 or equivalent.

- Large Capacity Tray -

1. Unplug the power supply cord of the LCT before servicing it.

2. Before placing the large capacity tray in the cassette holders, make sure that the paper position feeler is set properly.

- Others -

1. When the main board is removed from the PCB plate, do not put it on a conductive surface. (This is to avoid discharging the battery for the user program memory.)

2. When installing a new main board, remove the RAM from the old main board. Reinstall the old RAM on the new main board, if the old RAM is not faulty.

3. When installing the PTL board, be sure that the drum stay has been already installed, if the drum stay is not installed the drum may be damaged by the PTL board.

4. When replacing a sensor, do not overtighten the screw. If the screw is overtightened, the sensor may be damage.

5. When taking out drum, be sure that the PTL board has already been removed, if the PTL board is not removed the drum may be damaged by the PTL board.

SPECIAL TOOLS AND LUBRICANTS

Part Number	Description	Q'ty
52159500	Docotor Gap Gauge	1
52059601	Switching Board	1
52059101	Gap Gauge - 0.1 mm	1
52059111	Omega Clamp	1
52069600	Sensor Checker	1
52039501	Grease (Shinetsu Silicone G-501)	1
54429101	Setting Powder	1
54429106	Drum Shoe	1
54479104	Shoe Adapter	1
54209504	Digital Thermometer	1
54209505	Digital Thermometer Probe	1
54209507	Digital Multimeter	1
54209550	Silicone Oil	1
54479078	Heat Resistant Grease (MT-78)	1
54209516	Test Chart OS-A3 (10pcs/set)	-
54209502	Test Chart OS-A3 (100pcs/set)	-
54429103	Launa Oil	1

SECTION 3

REPLACEMENT AND ADJUSTMENT

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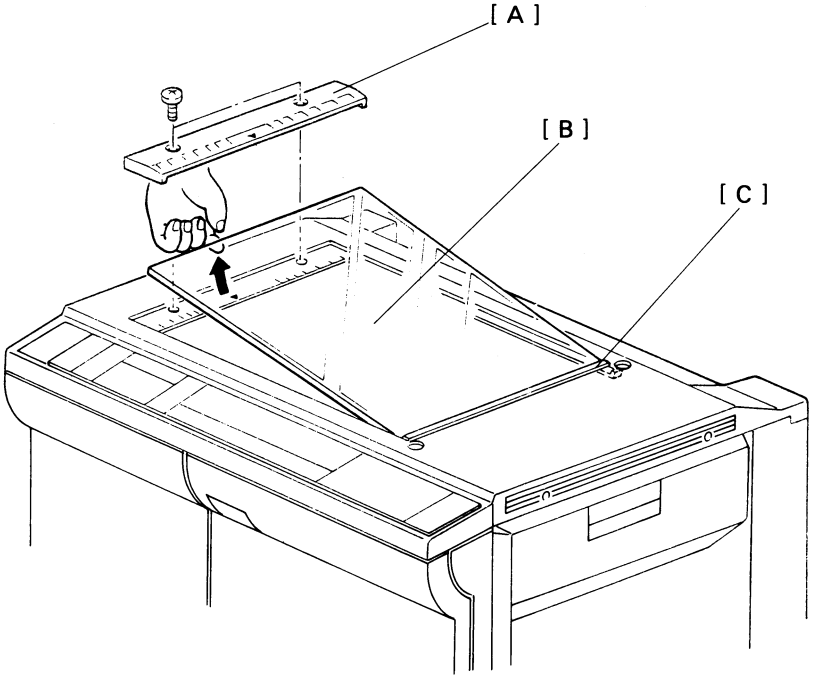
1. OPTICS

- EXPOSURE GLASS REMOVAL -



1. Take off the left scale [A] (2 short screws).

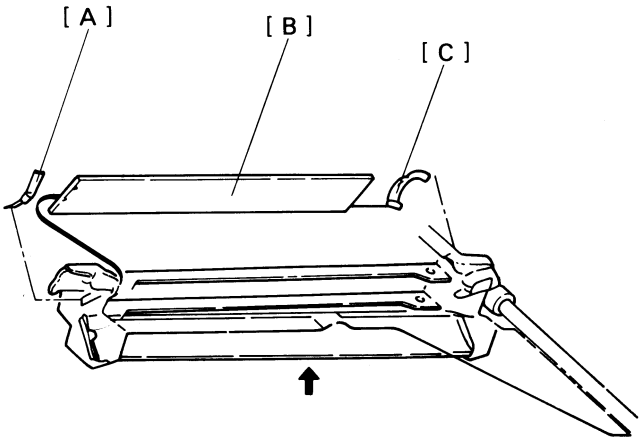
2. Grasp the left edge of the exposure glass [B] and lift it up slightly. Slide the other edge out from under the right glass holder [C]. Remove the exposure glass.

NOTE: - When reinstalling the exposure glass:

- **Make sure that the left edge of the glass is flush with the two tabs to the left of the scale plate.**

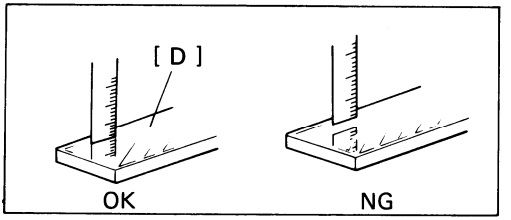
- **Make sure that the right glass holder firmly secures the exposure glass.**

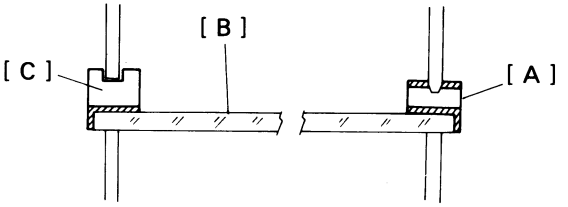
- 2ND MIRROR REMOVAL -



NOTE: **This procedure is usually performed in order to make cleaning the 3rd mirror easier.**

1. Turn off the main switch.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Move the 1st scanner 2/3 to the right by pushing it at the rear.
4. Remove the front spring plate [A] by pressing the top of the spring and moving the plate towards the front of the machine.
5. Carefully pull the 2nd mirror [B] towards the front of the machine to remove the rear spring plate [C].
6. Lift the mirror out of the machine rear side first.
7. Clean mirrors with silicone cloth or water, and then dry.





- To Reinstall -

8. Place the rear spring plate [A] in place and hold it with your finger.

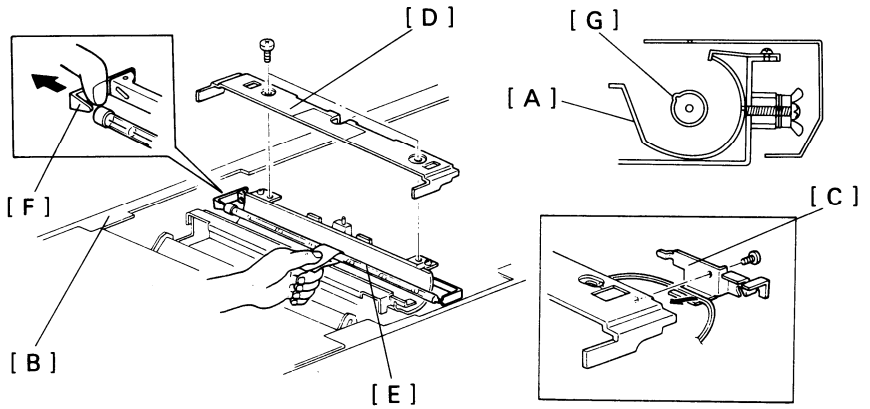
9. Insert the 2nd mirror [B] into the front side plate cut out.

10. Insert the rear side of the mirror into the rear spring plate.

11. Locate the bottom of the front spring plate [C] and rotate the top of the spring into position.

NOTE: Make sure that you install the mirrors with the reflecting surface [D] facing the lens as shown.

- EXPOSURE LAMP REPLACEMENT -



CAUTION: Do not touch the reflector [A] or the new exposure lamp with your bare hands. Use a strip of paper as shown. (Finger oil marks on the lamp or reflectors will be affected by the heat and will result in discoloration.)

1. Turn off the main switch.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Move the first scanner to the position where the rear frame [B] is cut out.
4. Remove the front terminal cover [C] (1 screw) and the reflector cover [D] (2 screws) after unhooking the fiber optics cables.
5. Wrap a strip of paper around the exposure lamp [E] as shown.
6. Press the release lever [F] on the rear lamp terminal as shown and take out the lamp.
7. Install a new lamp using a strip of paper. (Set the front terminal first.)

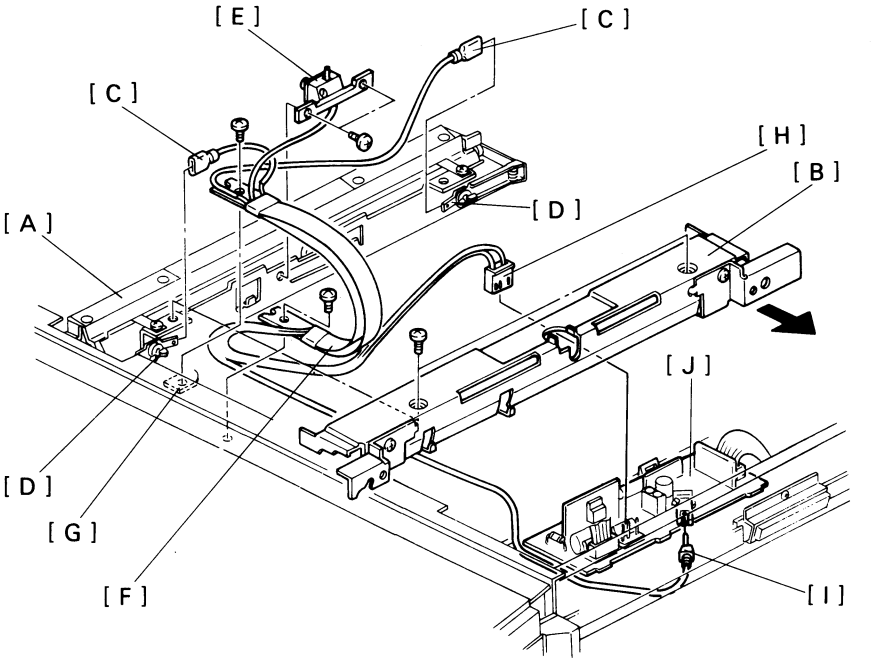
   NOTE: The blister [G] on the lamp must point towards the opening of the reflector as shown.

8. Reassemble the 1st scanner.

   NOTE: When reinstalling the front terminal cover, be careful not to damage the fiber optics cable.

9. Check the exposure lamp position, the light intensity and auto ID sensor. (See Exposure Lamp Position, Light Intensity and Auto ID Sensor Adjustments.)

- AUTO ID FIBER CABLE REPLACEMENT -

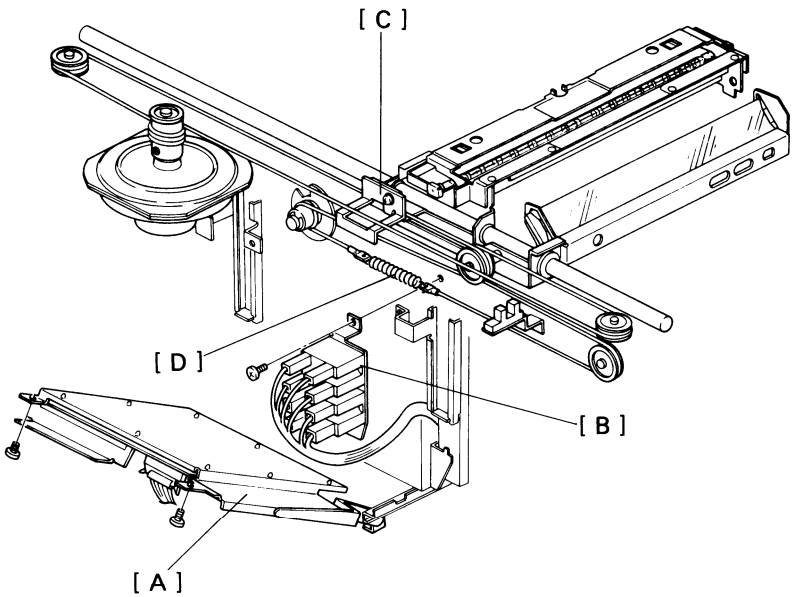


1. Turn off the main switch.
2. Remove the platen cover.
3. Remove the exposure glass (See Exposure Glass Removal.) and the upper cover (11 screws).
4. Position the first scanner [A] in the cut out for scanner removal.
5. Move the reflector cover [B] in the direction of the arrow (2 screws).

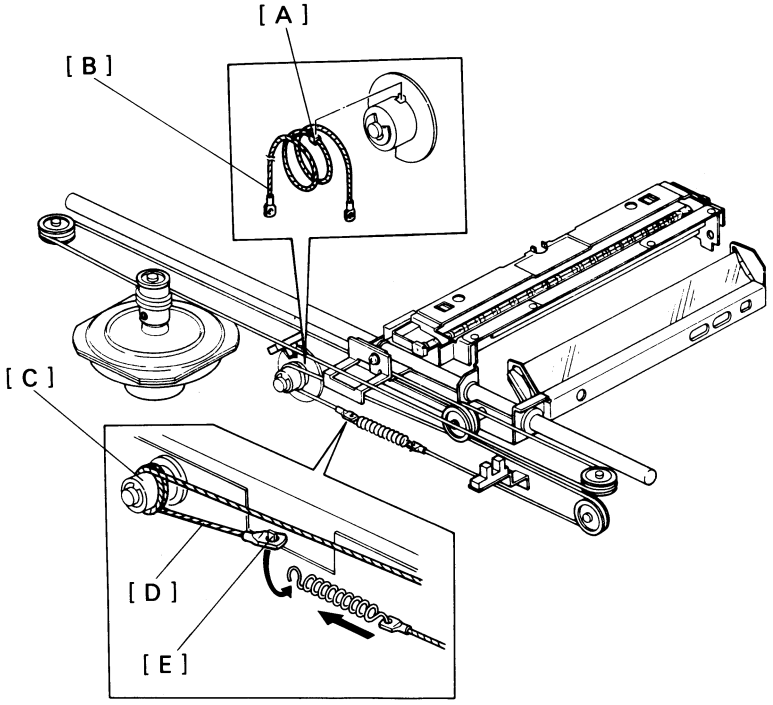
   NOTE: Unhook the fiber optics cable from the reflector cover.

6. Remove the exposure lamp leads [C] from the exposure lamp terminal [D].
7. Remove the auto ID sensor [E] (2 screws).
8. Remove the scanner harness [F] from the harness hold-down block [G] (1 screw).
9. Disconnect the exposure lamp harness [H] and the fiber optics cable [I] from the lamp regulator [J].
10. Replace the auto ID fiber optics cable.

- SCANNER DRIVE WIRE REPLACEMENT -

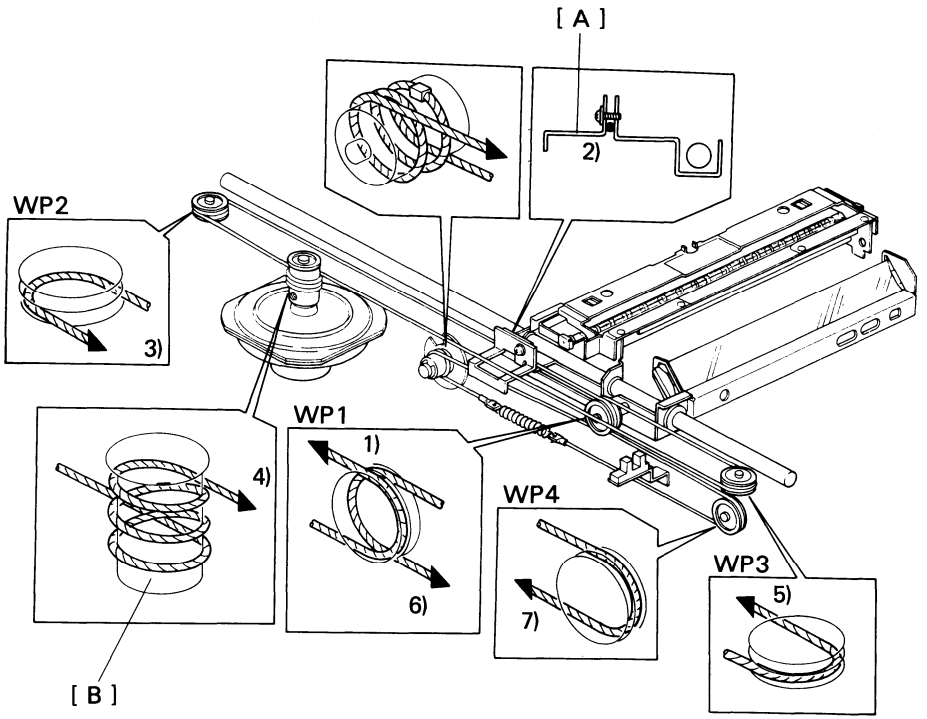


1. Turn off the main switch.
2. Remove the platen cover and the upper cover (11 screws).
3. Remove the left scale (2 short screws) and the exposure glass.
4. Remove the rear cover and lower the PCB plate [A] (2 screws each).
5. Remove the power relay bracket [B] (1 screw).
6. Loosen the wire clamp screw [C].
7. Unhook the tension spring [D] and remove the scanner drive wire.



8. Position the bead [A] of the new wire [B] on the groove of the 2nd scanner drive pulley [C] and wrap the wire around the pulley with two and a half turns as shown.

9. Hook the short end [D] of the wire to the stopper [E] as shown.



10. Run the scanner drive wire over the pulleys in the following order:

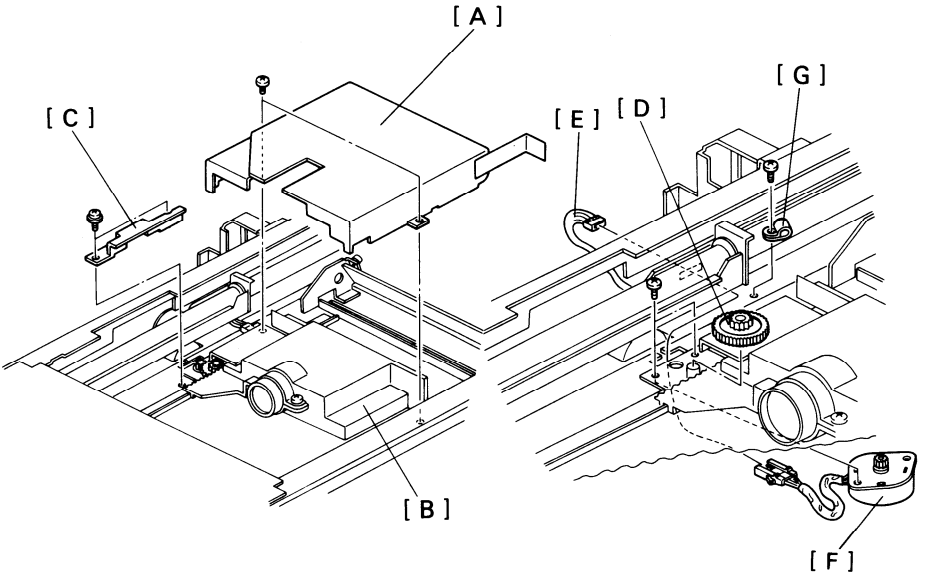
    1) Long end should be in the outer track (WP1).
    2) Lower side (wire clamp [A])
    3) Lower track (WP2)
    4) Three and a half turns from lower to upper (Scanner Drive Pulley [B]).
    5) Lower track (WP3).
    6) Inner track (WP1).
    7) Track (WP4).

11. Pull the ends of the wire together and join them with the tension spring. (See the preceding page.)

12. Rotate the scanner drive pulley and make sure that the scanner drive wire moves smoothly and that there is no overlapping around the scanner drive pulley.

    NOTE: Step 12 is important! If overlapping of the scanner drive wire occurs, then the trail edge of A3 (11" x 17") copies may be reduced.

- LENS DRIVE MOTOR REPLACEMENT -



1. Turn off the main switch and remove the following parts:

   1) Development unit
   2) Charge corona unit (1 screw)
   3) Toner collection bottle
   4) Drum stay (1 screw and knob)
   5) Cleaning unit
   6) Drum flange and drum - should be covered with a shielding sleeve.

2. Remove the platen cover and the mounting studs.

3. Remove the left scale, the exposure glass, and the upper cover.

4. Move the scanner to the home position.

5. Remove the lens cover [A] (2 screws).

6. Move the lens unit [B] to a reduction position.

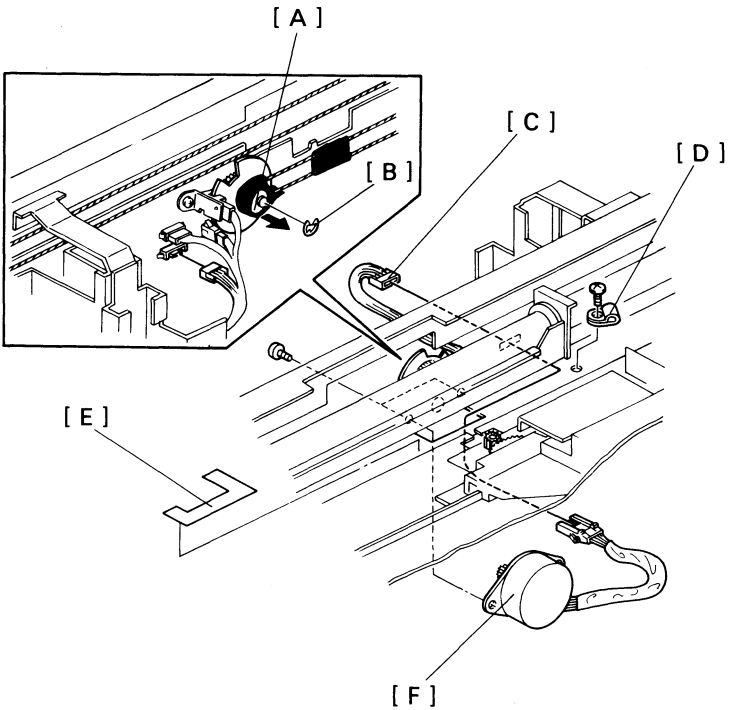
7. Remove the lens drive gear cover [C] (2 screws) and the idle gear [D].

8. Remove the rear cover and lower the PCB plate (2 screws each).

9. Disconnect the connector [E] (6p; black) of the lens drive motor [F] and remove the nylon clamp [G] (1 screw).

10. Replace the lens drive motor [F] from the front (2 screws).

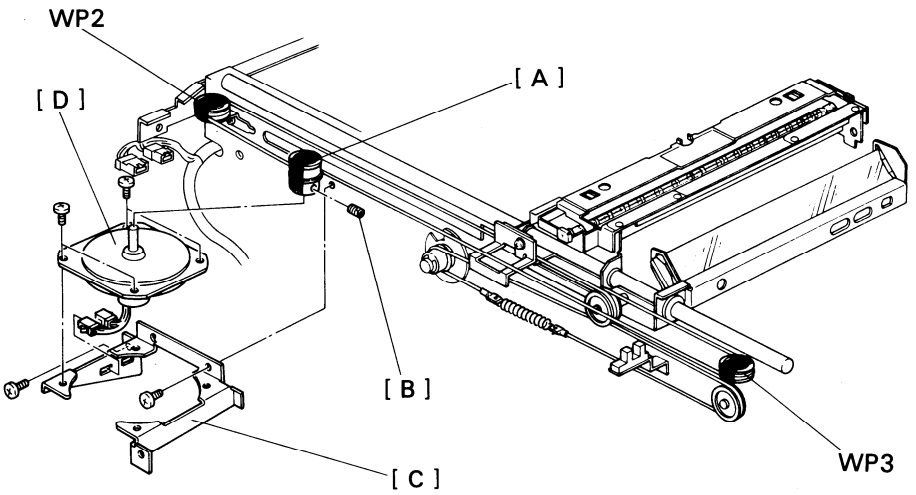
- 2ND SCANNER DRIVE MOTOR REPLACEMENT -



Perform Steps 1 through 6 of “Lens Drive Motor Replacement.”

1. Tape the 2nd scanner drive pulley [A] and the scanner drive wire as shown to avoid the scanner wire coming off.
2. Remove the E-ring [B] from the 2nd scanner drive shaft and move the pulley slightly in the direction of the arrow.
3. Disconnect the 2nd scanner drive motor connector [C] (6p; white) and the nylon clamp [D] (1 screw).
4. Remove the mylar [E].
5. Replace the second scanner drive motor [F] from the front (2 screws).

- SCANNER DRIVE MOTOR REPLACEMENT -



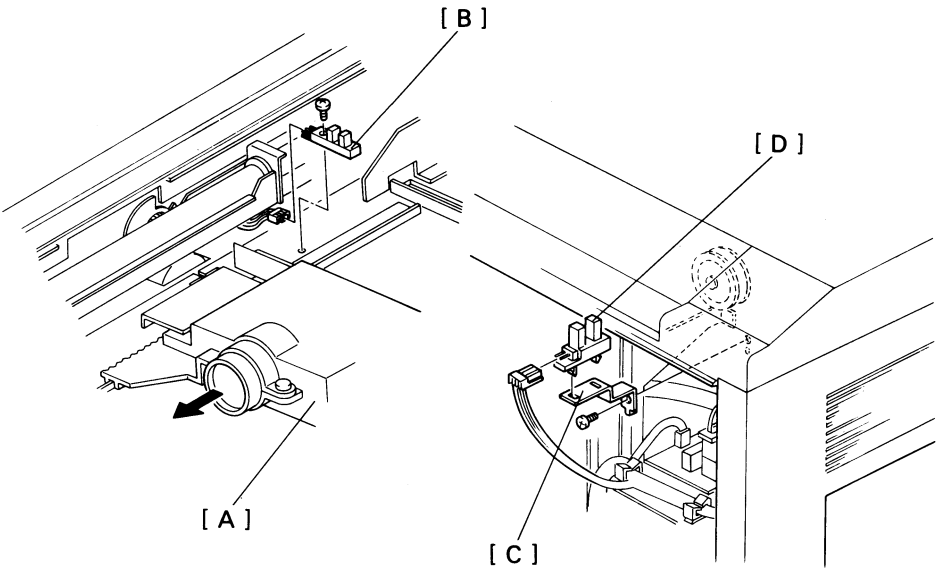
1. Turn off the main switch.
2. Remove the platen cover and the mounting studs.
3. Remove the left scale (2 short screws), the exposure glass, and the upper cover (9 screws).
4. Remove the rear cover 2 (screws).
5. Tape the scanner drive pulley [A] and pulleys WP2 and WP3 as shown to avoid the scanner wire coming off.
6. Loosen the scanner drive pulley (1 Allen screw [B]).
7. Remove the scanner drive pulley from the motor shaft.
8. Remove the motor bracket [C] (3 screws).
9. Remove the scanner drive motor [D] (4 screws and 2 connectors).
10. Install the new scanner drive motor and reassemble.

NOTE: a) When installing the scanner drive motor, make sure the 3p connector is positioned on the left-hand side.

b) When installing the scanner drive pulley on the motor shaft, the scanner drive pulley should be flush with the end of the motor shaft.

11. Examine the scanner drive wire for proper installation.

- LENS HOME POSITION SENSOR REPLACEMENT -



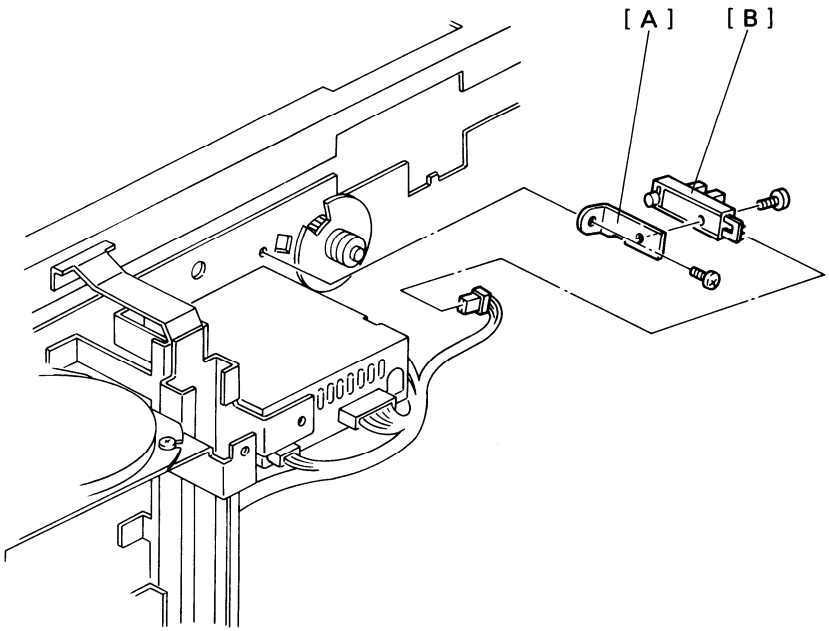
1. Turn off the main switch.
2. Remove the left scale and the exposure glass. (See “Exposure Glass Removal”.)
3. Remove the lens cover (2 screws) and move the lens unit [A] in the direction of the arrow.
4. Replace the lens home position sensor [B] (1 screw and 1 connector).

   NOTE: Do not overtighten the screw when securing the new sensor.

- SCANNER HOME POSITION SENSOR REPLACEMENT -

1. Turn off the main switch.
2. Remove the rear cover (2 screws).
3. Remove the sensor bracket [C] (1 screw).
4. Replace the scanner home position sensor [D] (1 connector).

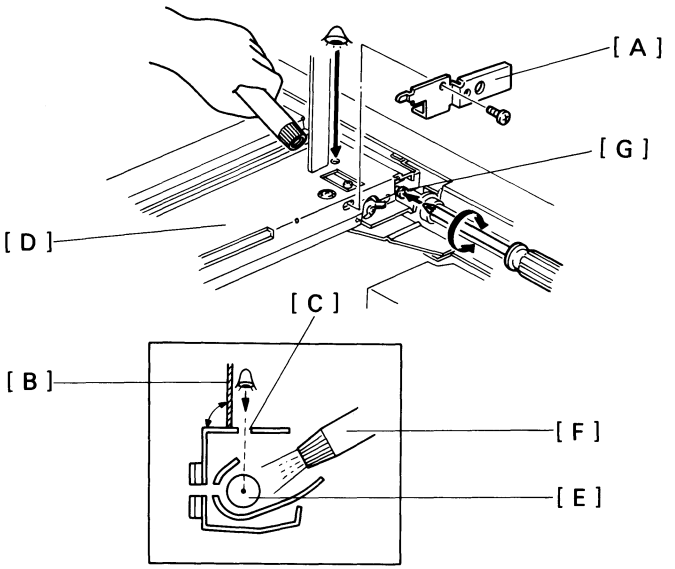
- 2ND SCANNER HOME POSITION SENSOR REPLACEMENT -



1. Turn off the main switch.
2. Remove the rear cover (2 screws).
3. Remove the sensor bracket [A] (1 screw).
4. Replace the 2nd scanner home position sensor [B] (1 screw and 1 connector).

NOTE: Do not overtighten the screw when securing the new sensor.

- EXPOSURE LAMP POSITION ADJUSTMENT -



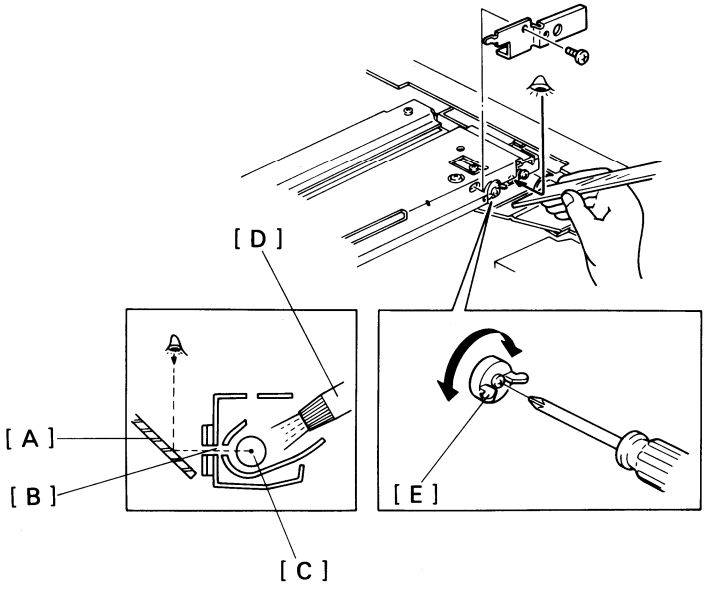
1. Turn off the main switch.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Move the first scanner to the position where the rear frame is cut out.
4. Remove the front and rear terminal covers [A] (1 screw each).

- Horizontal Adjustment -

5. Position a scale [B] near the rear sight hole [C] of the reflector cover [D] to form a right angle for viewing alignment as shown.
6. View the lamp filament [E] through the sight hole in parallel with the scale. The filament should be directly beneath the sight hole.

NOTE: If the filament cannot be seen easily, use a pen light [F] to illuminate the exposure lamp.

7. To correct the position of the filament turn the adjusting screw [G].
8. Repeat the above steps from 5 to 7 with the front sight hole.



- Vertical Adjustment -

9. Position a mirror [A] beside the rear sight hole [B] at at 45° angle as shown.

   NOTE: If you do not have a mirror, remove and use the 2nd mirror.

10. View the lamp filament [C] through the sight hole reflected on the mirror. The filament should be level with the sight hole.

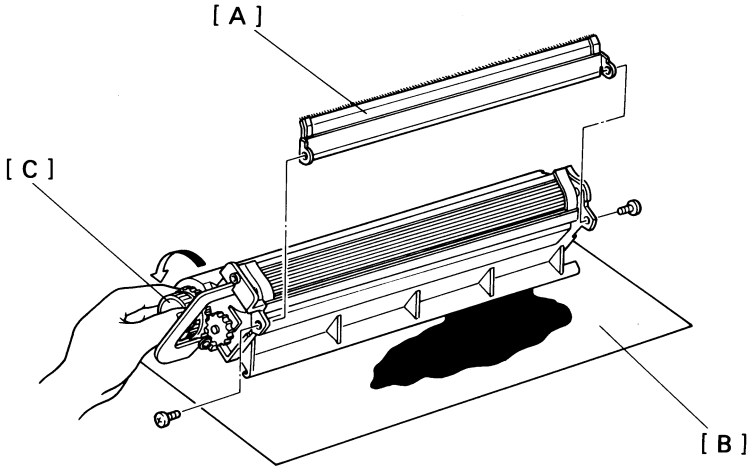
    NOTE: If the filament cannot be seen easily, use a pen light [D] to illuminate the exposure lamp.

11. To correct the position of the filament, turn the adjusting knob [E].

12. Repeat the above steps from 9 to 11 with the front sight hole.

2. DEVELOPMENT AND TONER SUPPLY

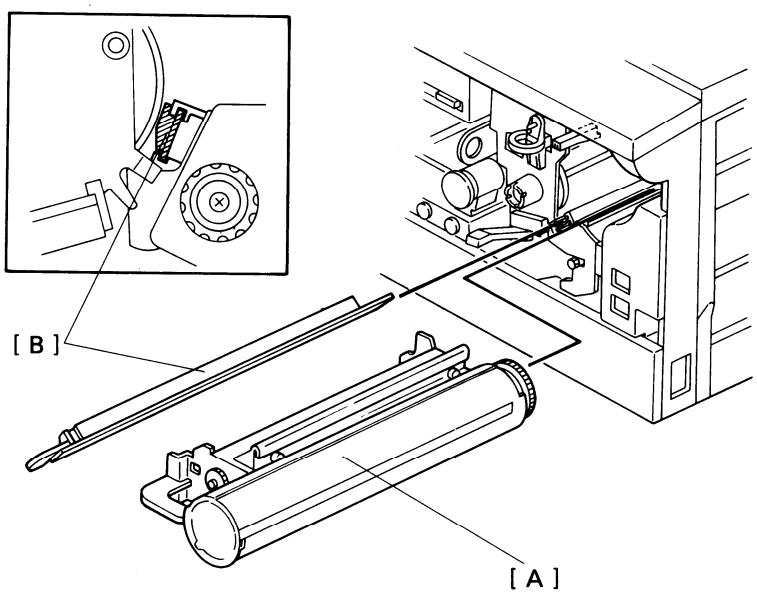
- DEVELOPER REPLACEMENT -



CAUTION: - Be careful not to bend the bias terminal.
- Be careful not to damage the upper brush seal.
- After removing used developer, clean the drive gears and end magnets.

1. Take out the development unit and remove the toner tank (2 screws).
2. Remove the development brush cover [A] (2 screws) and clean it.
3. Set the development unit on a large sheet of paper [B] with the unit's inlet facing downward.
4. Turn the paddle roller knob [C] counterclockwise. The developer will fall out onto the paper.
5. Hold the unit at an angle and dump out the developer that has collected at the ends of the development unit.
6. Repeat the above steps until you have removed all of the developer.
7. Clean the development end magnets.
8. Turn the unit right-side up and pour in one bottle of developer (1 kg).
9. Put the used developer into the empty bottle or disposal bag and dispose it according to the local regulations.
10. Reassemble the toner tank (2 screws) and replace the development

- IMAGE DENSITY SENSOR/PTL REMOVAL -

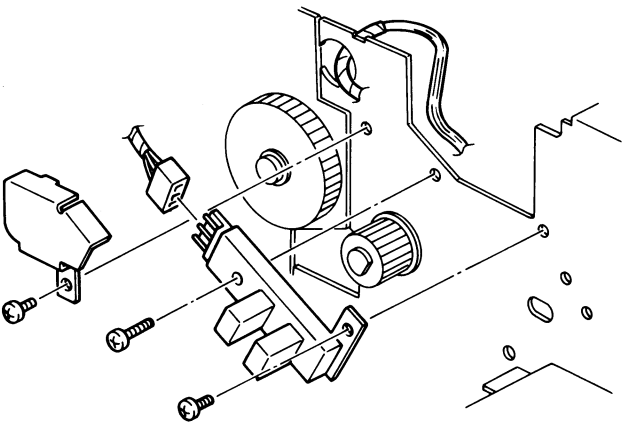


1. Open the right and left front doors.
2. Remove the development unit [A].
3. Slide out the image density sensor/PTL [B].
4. Clean and reinstall the ID sensor/PTL.

   NOTE: - When sliding in the ID sensor/PTL board, make sure that the board is properly located on the rails as shown.

5. Reinstall the development unit.

- COLOR TONER END SENSOR REPLACEMENT -



1. Turn off the main switch and remove the following parts:

   - Development unit
   - Charge corona unit (1 screw)
   - Drum stay (1 screw and 1 knob)
   - Cleaning unit
   - Drum flange and drum - should be covered with a shielding sleeve
   - Toner shield glass

2. Remove the connector cover [A] (1 screw).

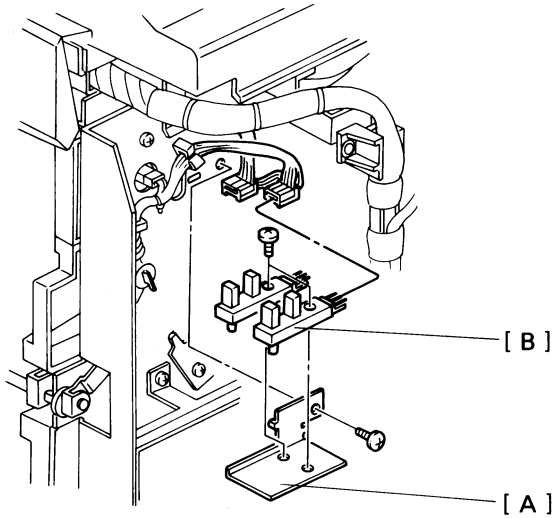
3. Remove the sensor bracket [B] (1 screw).

4. Remove the color toner end sensor [C] (1 screw).

5. Reinstall the above parts.

   NOTE: Do not overtighten the screw when securing the new sensor.

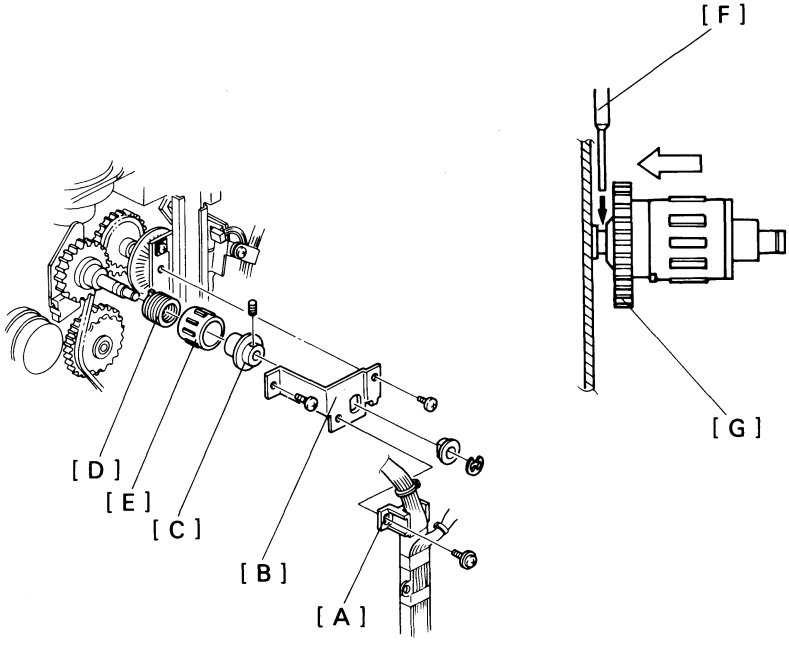
- COLOR TONER SENSOR REPLACEMENT -



1. Remove the rear cover (2 screws).
2. Remove the color toner sensor bracket [A] (1 screw).
3. Replace the color toner sensors [B] (1 screw and 1 connector each).
4. Reassemble.

NOTE: Do not over tighten the screw when securing the new sensor.

- TONER SUPPLY CLUTCH LUBRICATION -



1. Turn off the main switch.
2. Remove the rear cover (2 screws).
3. Remove the screw securing the dc harness guide [A] to the toner supply clutch support bracket [B].
4. Remove the Toner Supply clutch support bracket.
5. Remove the clutch hub [C] (1 Allen screw), the spring [D], and the sleeve [E].
6. Clean the clutch hub, spring, and gear.
7. Apply the grease (Mobil Temp 78) inside the spring.

NOTE: - Make sure that the right-angle projection is inside the notch of the sleeve.

- When securing the Allen screw of the clutch hub, insert a 0.1 mm gap gauge [F] between the E-ring and the toner supply roller drive gear [G] as shown in the figure.

- IMAGE DENSITY SENSOR CHECK AND ADJUSTMENT -

NOTE: ID sensor adjustment is required in the following cases:

- **When the ID sensor/PTL board is replaced.**
- **When the main board is replaced.**
- **When the drum has been replaced and Vsg is out of standard.**
- **When a problem with toner supply occurs and checking the ID sensor shows that Vsg is not within specifications.**

ADJUSTMENT STANDARD: +4 ± 0.2V

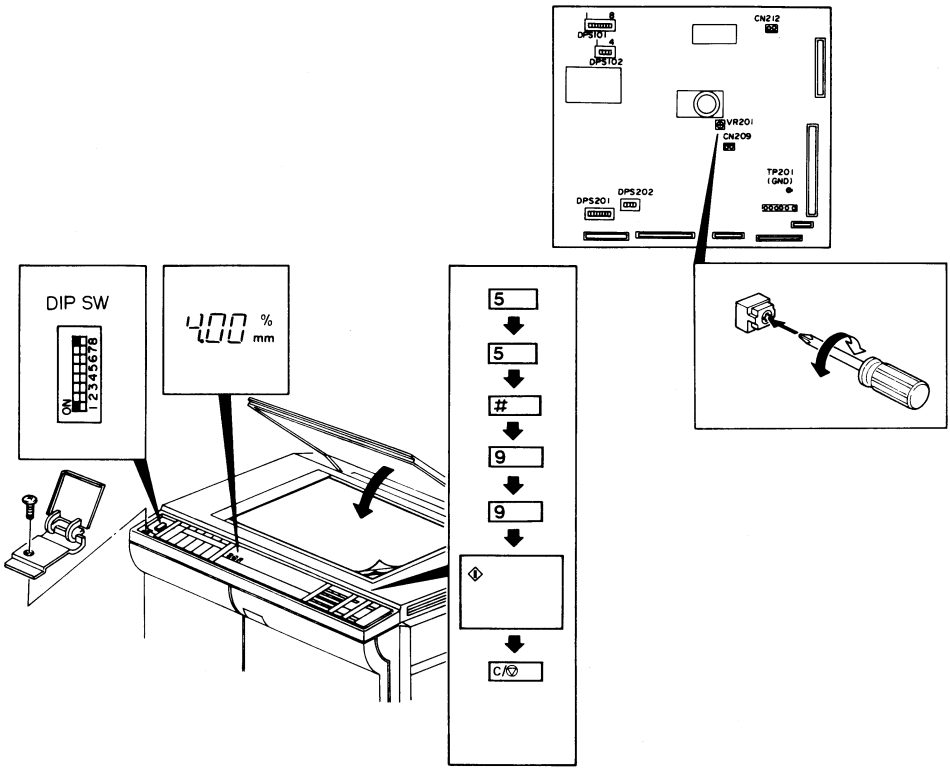
METHOD A: Readout from the CPU

1. Clean the following parts:

   - Image density sensor
   - Optics (Mirrors, reflectors, lens, and toner shield glass)
   - Charge corona wire with dry cloth
   - Erase lamp unit
   - Quenching lamp

2. Place 2 or 3 sheets of paper (A3 or 11”x17”) on the exposure glass and lower the platen cover.

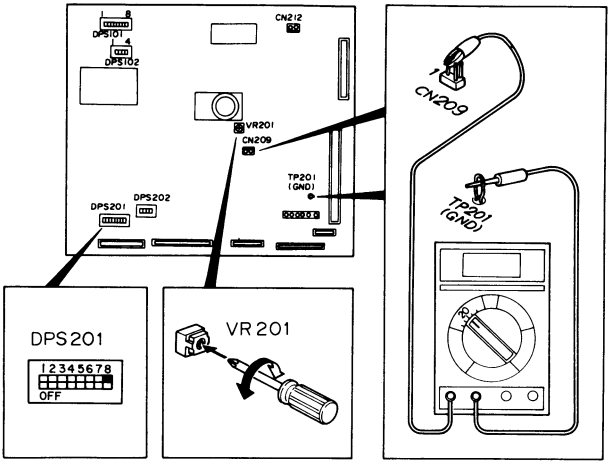
3. Confirm that the main switch is off and turn on DIP SW No. 1-1 and No. 1-8 under the instruction cards on the operation panel.



4. Turn on the main switch and allow it to warm up.
5. Enter “55” using the Number keys, then press the Enter key.
6. Enter “99” in the copy counter.
7. Press the Start key to show Vsg in the magnification indicator.
8. If Vsg is incorrect, remove the rear cover (2 screws).
9. While Vsg is displayed, adjust VR201 on the main board to +4 ± 0.2 volts.

   NOTE: **VR201 clockwise => increase voltage**
   VR201 counterclockwise => decrease voltage

10. Press the C/S key to stop the copier.
11. Turn off the main switch and turn off DIP SW No. 1-1 and No. 1-8.



Method B: With a Digital Multimeter

Follow steps 1 through 3 of method A. (DIP SW NO. 1-1 ON and NO. 1-8 OFF)

1. Confirm that the main switch is off and turn on DIP SW 201-8 on the main board.

2. Hook up the multimeter leads as follows:
   Positive lead to pin 1 of CN209 on the main board
   Negative lead to TP201 (Ground) and select the 20-volt-dc setting.

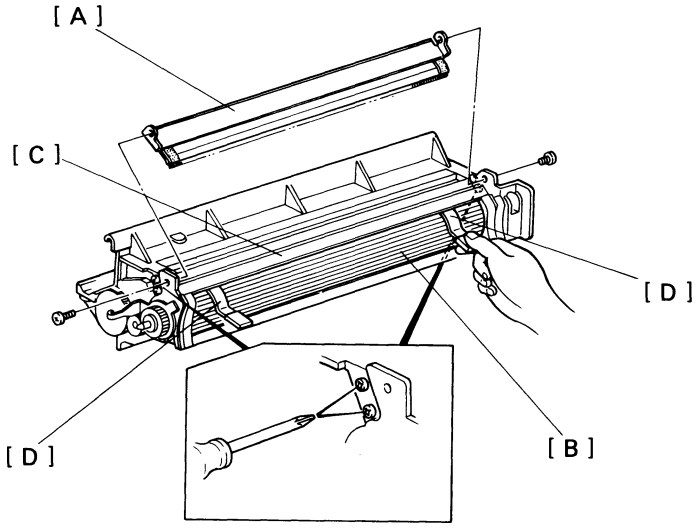
   Note: Hook up the positive lead using a crocodile clip as shown.

3. Turn on the main switch and enter “99” in the copy counter, then press the start key.

4. Adjust VR201 to give a reading of +4 ± 0.2 volts.

5. Turn off the main switch; then, turn off Dip 201-8 and DIP SW No. 1-1.

- DOCTOR GAP ADJUSTMENT -



ADJUSTMENT STANDARD: 0.76 ± 0.1 mm (0.03" ± 0.004")

NOTE: This adjustment is done only when the doctor blade has been either removed or replaced.

1. Remove the upper brush seal cover [A] (2 screws).
2. Turn the development roller sleeve [B] in the opposite direction of normal operation to drop the developer into the development tank.
3. Loosen the doctor plate [C] (4 screws).
4. Clean the development roller and insert the Doctor Gap gauges [D] (Part Number #52159500) near both ends of the development roller between the doctor blade.

NOTE: Ensure that there is no developer between the development unit and the gauses.

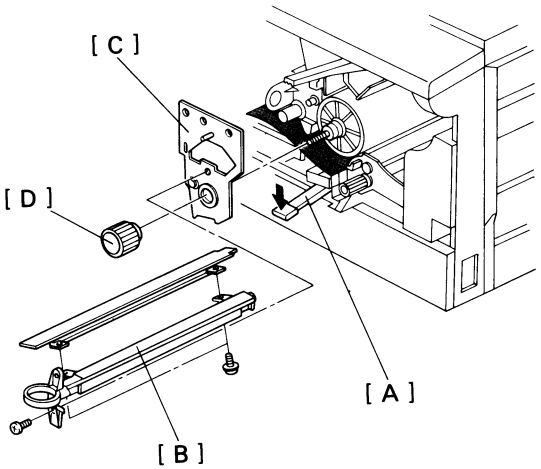
5. Press on the doctor plate and tighten the screws.
6. Pull the gauses lower sleeve and remove them.

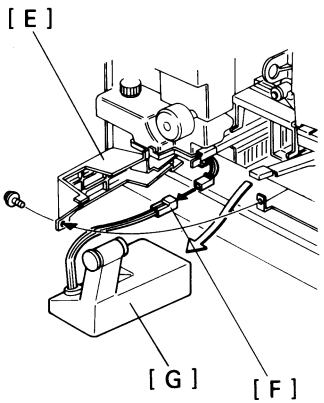
CAUTION: Do not scratch the sleeve with the gauses.

7. Reassemble the development unit.

3. CLEANING

- CLEANING UNIT REMOVAL -



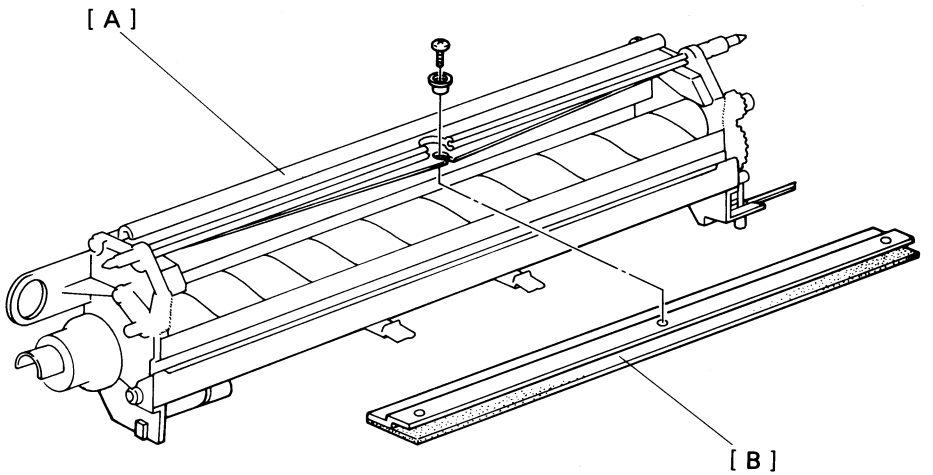


1. Remove the development unit and the PTL board.
2. Lower the T/S corona unit [A].
3. Remove the charge corona unit [B] (1 screw) and the drum stay [C] (1 knob [D] and 1 screw).

   NOTE: The drum stay knob has a reverse thread.
4. Swing the toner collection bottle cover [E] to the left (1 screw).
5. Disconnect the toner collection bottle sensor [F] (1 connector).
6. Remove the toner collection bottle [G].
7. Slide out the cleaning unit.

   CAUTION: **Be sure the pick-off pawls are kept away from the drum when removing the cleaning unit or serious drum damage will result.**

- CLEANING BLADE REPLACEMENT -

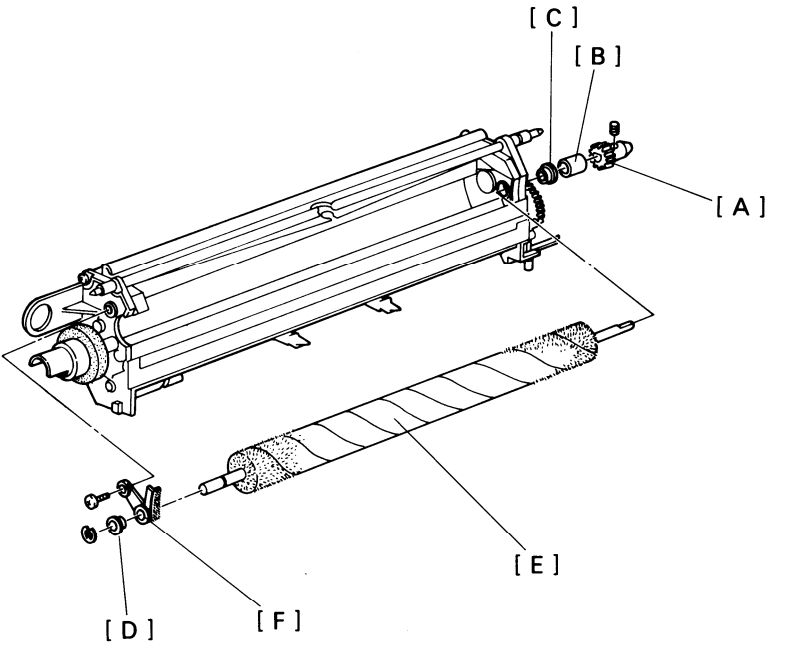


1. Take out the cleaning unit [A]. (See “Cleaning Unit Removal.”)
2. Remove the cleaning blade [B] (1 screw and 1 bushing).
3. Install the new cleaning blade.

CAUTION: - Be careful not to touch the edge of the new blade.

- After installing the blade, make sure that the blade swivels.

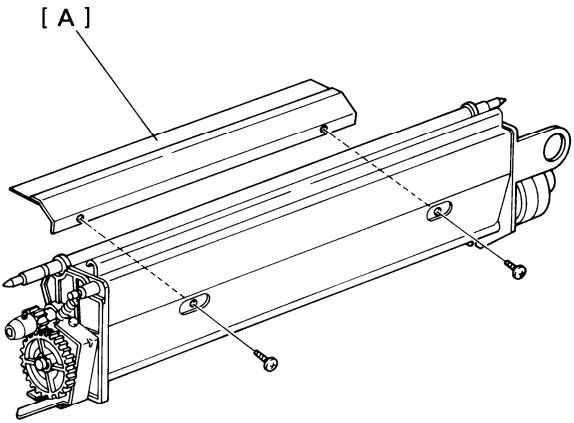
- CLEANING BRUSH REPLACEMENT -



1. Remove the cleaning unit drive gear [A] (1 Allen screw), the collar [B], and the bushing [C] from the rear end of the cleaning brush shaft.
2. Remove the bushing [D] from the front end (1 E-ring).
3. Take out the cleaning brush [E] with the brush shaft holder [F] (1 screw).
4. Take the brush shaft holder off the front end.
5. Install the new cleaning brush and reassemble the unit.

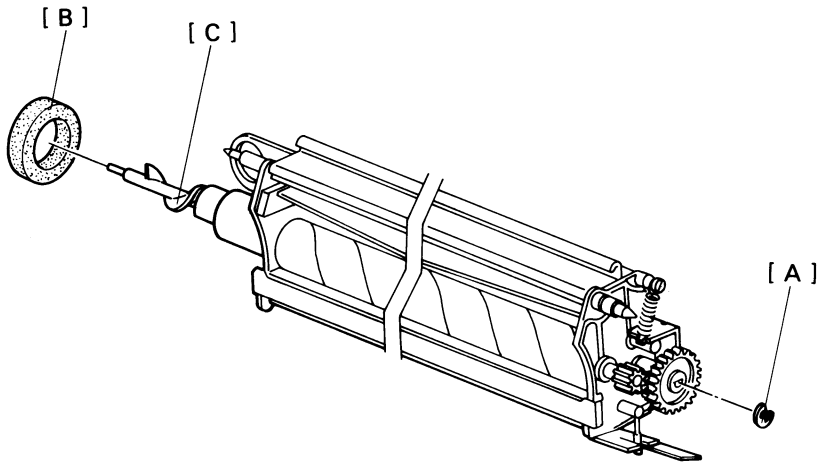
CAUTION: Do not touch the new brush; handle only the shaft.

- BLADE SCRAPER REPLACEMENT -



1. Remove the cleaning blade. (See Cleaning Blade Replacement.)
2. Remove the cleaning brush. (See Cleaning Blade Replacement.)
3. Take out the blade scraper [A] (2 screws).
4. Clean the inside of the cleaning unit, and install a new blade scraper.

- TONER COLLECTION COIL REPLACEMENT -

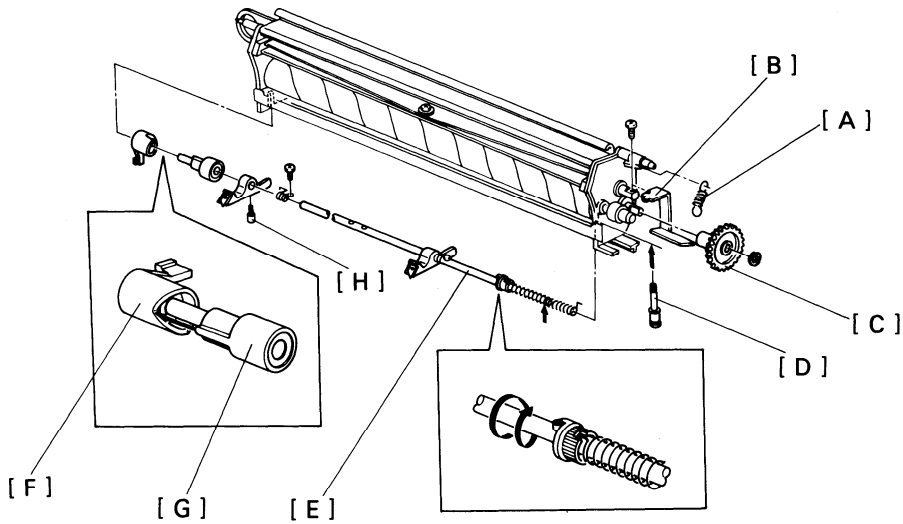


1. Remove the E-ring [A] from the toner collection coil shaft.
2. Remove the bottle joint seal [B].
3. Slide out the toner collection coil [C] from the front side of the cleaning unit.

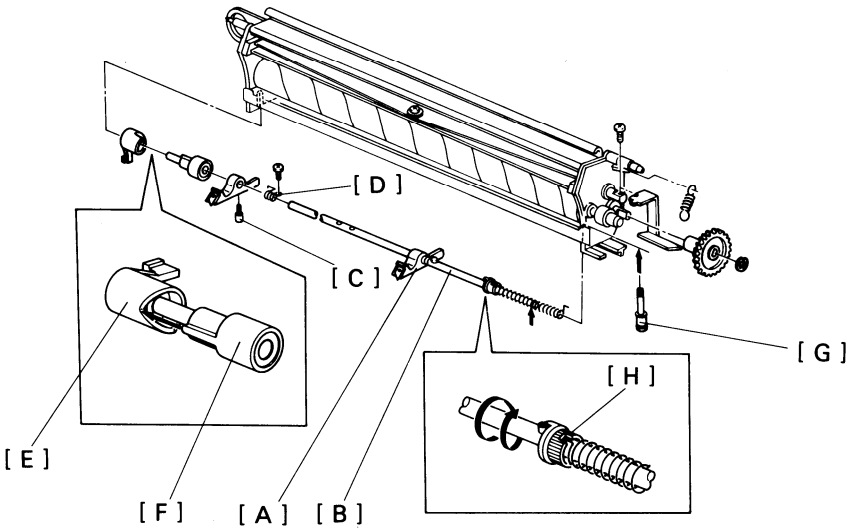
   CAUTION: Toner will fall out when the coil is slid out of the cleaning unit.

4. Clean the inside of the unit and install a new toner collection coil.

- PICK-OFF PAWL REPLACEMENT -



1. Remove the release spring [A] and the pressure lever [B] (1 screw).
2. Remove the collection coil gear [C] from the the toner collection coil shaft (1 E-ring).
3. Remove the pawl shaft pin [D] from the pawl shaft [E].
4. Push the pawl shaft to the rear and slide off the cam holder [F] from the front side plate.
5. Take out the whole pawl shaft assembly.
6. Slide off the cam holder and cam rider [G].
7. Slide off the front pick-off pawl [H] (1 positioning pin [I]) and the front pawl spring [J] (1 screw).
8. Slide off the rear pick-off pawl (1 positioning pin).



9. Set new pick-off pawls [A] on the shaft [B] and position them with the positioning pins [C] and pawl springs [D].

10. Assemble the pawl shaft assembly and set it on the cleaning unit sliding in the rear end of the shaft to the rear side plate.

    NOTE: - When installing the cam holder [E] and the cam rider [F], align X with Y as shown in the figure.

    - Make sure that the spring end is in the small hole on the rear side plate.

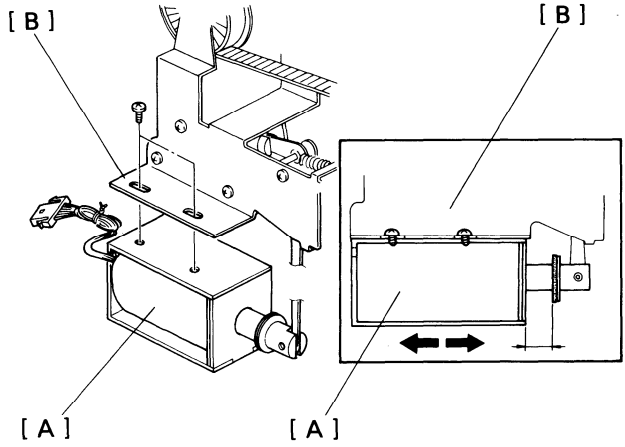
11. Install the pawl shaft pin [G].

12. Push the spring collar [H] to the rear and rotate it with one turn as shown in the figure. Then set the collar on the pin.

    NOTE: Make sure that the end of the spring is correctly positioned in the groove of the collar.

13. Reassemble.

- CLEANING PRESSURE ADJUSTMENT -



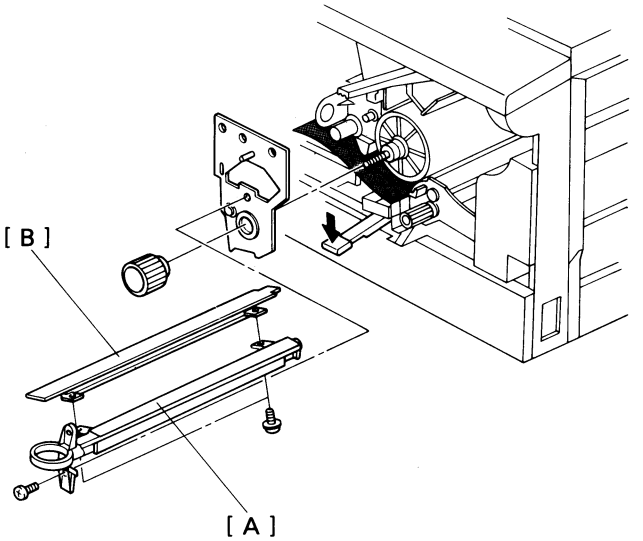
ADJUSTMENT STANDARD: A = 13 ± 0.5 mm (0.51" ± 0.02")

1. Turn off the main switch.
2. Remove the rear cover (2 screws).
3. Disconnect the fiber cables from the interface board if the DF is installed.
4. Lower the main PCB (2 screws).
5. Disconnect the AC harness from the T&S power pack and remove it (1 screw).
6. Lightly secure the cleaning solenoid [A] at the center of the bracket [B].
7. Position the cleaning solenoid to measuring the gap "A", then secure the cleaning solenoid.

NOTE: When adjusting the gap "A", make sure that the solenoid plunger is far way to the right.

4. QUENCHING

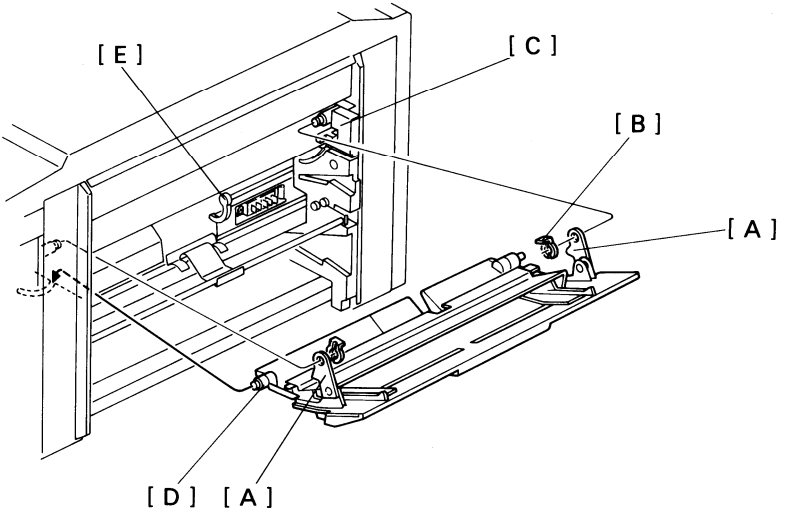
- QUENCHING LAMP REPLACEMENT -



1. Remove the charge corona unit [A] (1 screw).
2. Remove the quenching lamp [B] from the charge corona unit (2 screws).

5. PAPER FEED

- MANUAL FEED TABLE REMOVAL -



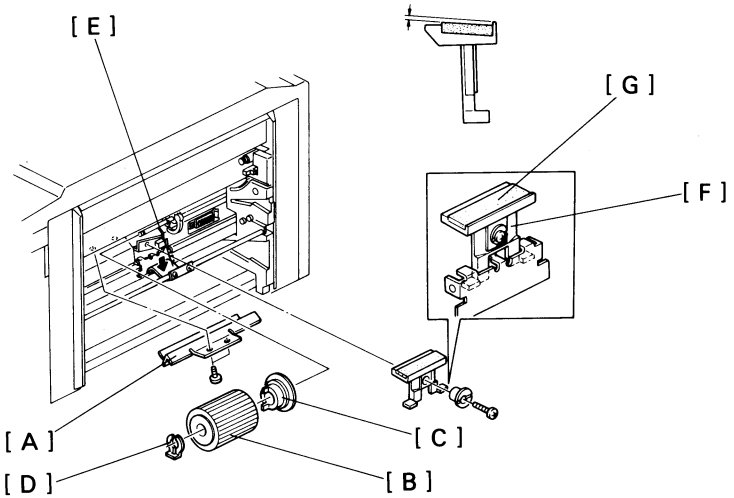
1. Remove the upper manual feed table hinges [A] from the copier (1 snap ring [B] each side).

   CAUTION: Be careful not to damage the manual feed sensor [C].

2. Slide the lower manual feed table hinge pins [D] down their respective grooves to remove the table.

   CAUTION: Be careful not to damage the paper end feeler [E].

- FEED ROLLERS AND FRICTION PAD REPLACEMENT -



1. Remove the manual feed table (See manual feed table removal).
2. Remove the upper front guide plate [A] (2 screws).

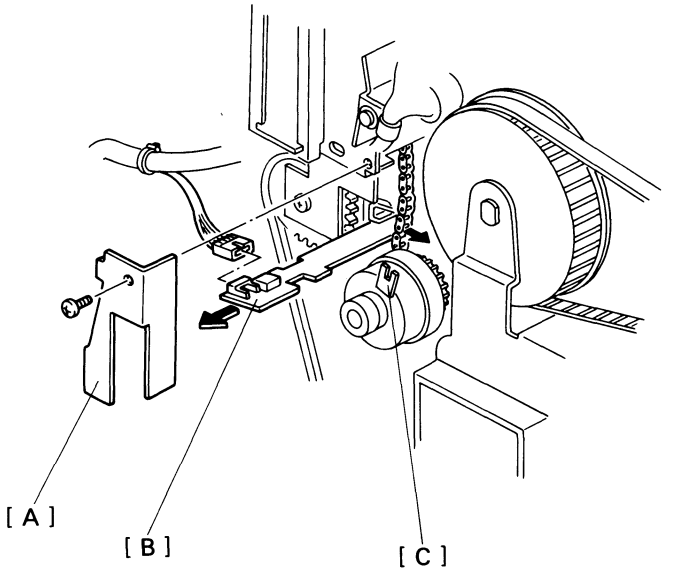
   NOTE: - The step 1 and 2 are for 1st feed station only.

3. Remove the feed roller [B] and hub [C] (1 snap ring [D]).
4. Press down on the cassette arm [E] and remove the friction pad holder [F] (1 screw and 1 cam roller).
5. Strip the old friction pad [G] off and clean the surface of the friction pad holder.
6. Install the new friction pad.
7. Grease the friction pad holder swivel point with Mobil Temp 78.
8. Reinstall the friction pad holder (1 screw and 1 cam roller) while holding the cassette arm down.

   NOTE: - We sure the legs of the friction pad holder are positioned under the spring loaded pad positioning mechanism.
   - Adjust the gap between the feed roller and the friction pad. (See "Feed Roller/Friction Pad Gap Adjustment")

9. Reinstall the feed roller and hub (1 snap ring).

- REGISTRATION SENSOR REPLACEMENT -



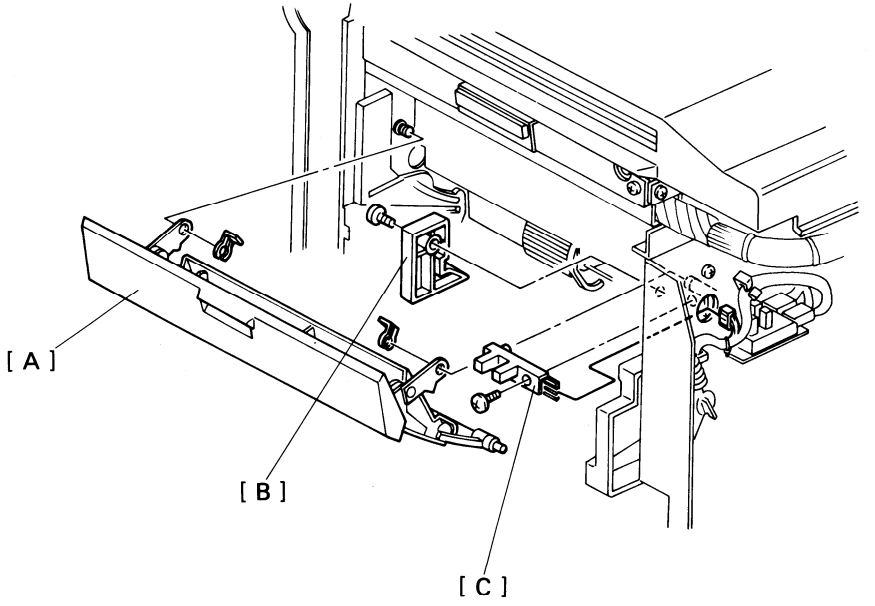
1. Remove the rear cover (2 screws) and lower the PCB plate (2 screws).
2. Remove the support bracket [A] (1 screw).
3. Move the main drive chain to the right of the PCB cut-out and slide out the registration sensor [B] (1 connector).

NOTE: - When sliding in the registration sensor board, make sure that the board is properly located on the rails.

- When reinstalling the support bracket, make sure that the bracket is properly engaged with the groove of the registration clutch stopper [C].

- The support bracket is responsible for holding the registration sensor in place; so, make sure it is correctly positioned.

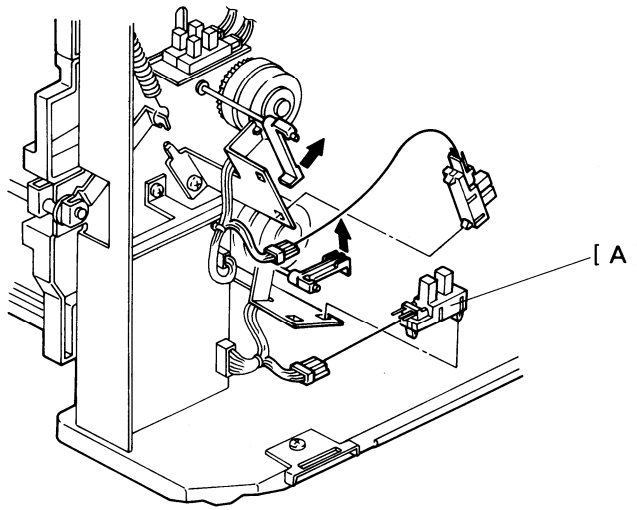
- MANUAL FEED SENSOR REPLACEMENT -



1. Remove the manual feed table [A]. (See Manual Feed Table Removal.)
2. Remove the rear cover (2 screws).
3. Remove the right rear cover (2 screws).
4. Remove the sensor cover [B] (1 screw).
5. Remove the manual feed sensor [C] (1 screw, 1 connector).
6. Install a new sensor.

   NOTE: Do not overtighten the screw when securing the new sensor.

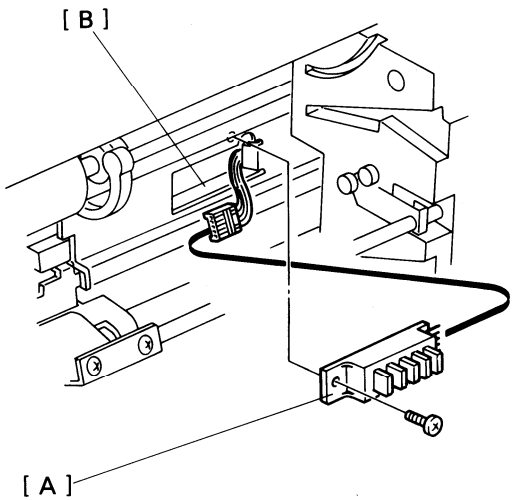
- PAPER END SENSOR REPLACEMENT -



1. Remove the rear cover (2 screws).
2. Remove the paper end sensors [A] (1 connector each).

CAUTION: Be careful not to damage the paper end sensor actuator.

- PAPER SIZE SENSOR REPLACEMENT -

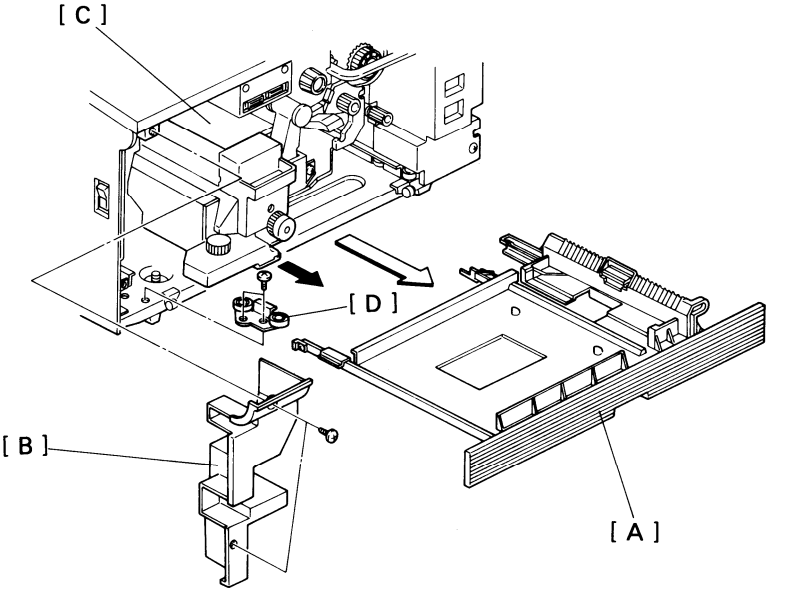


1. Remove the paper size sensor [A] from the sensor bracket [B] (1 screw and 1 connector).

2. Install a new sensor. Position the projection of the sensor in the hole of the sensor bracket.

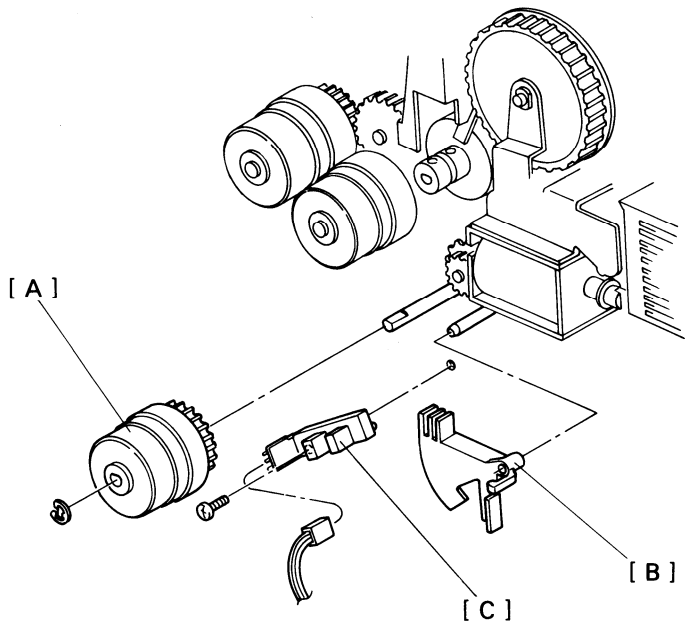
   NOTE: Do not overtighten the screw when securing the new sensor.

- CASSETTE TRAY REMOVAL -



1. Open the left and right front doors and pull out the cassette tray [A].
2. Remove the left inner cover [B] (2 screws).
3. Pull the fusing unit [C] about one third of the way out.
4. Remove the left guide roller bracket [D] (2 screws).
5. Remove the cassette tray.

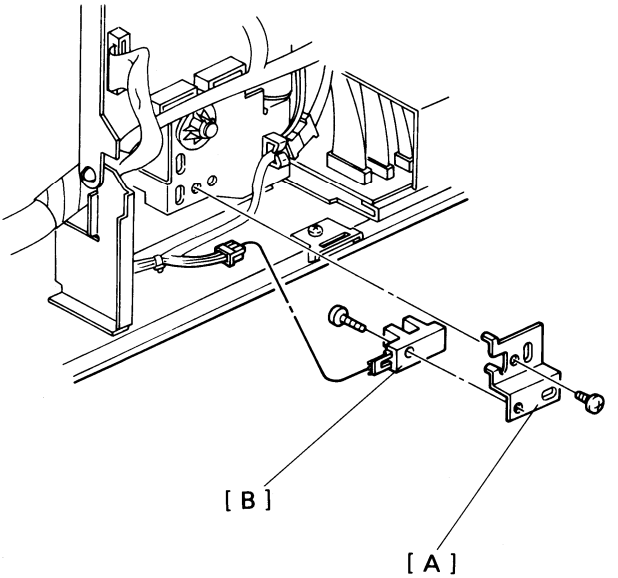
- PAPER END SENSOR REPLACEMENT (CASSETTE TRAY) -



1. Remove the rear cover (2 screws).
2. Remove the PCB plate supporter (1 screw).
3. Remove the 3rd paper feed clutch [A] (1 E-ring).
4. Remove the paper end sensor actuator [B].
5. Replace the paper end sensor [C] (1 screw, 1 connector).

NOTE: When reinstalling the sensor, make sure that the actuator is properly aligned; do not overtighten the screw.

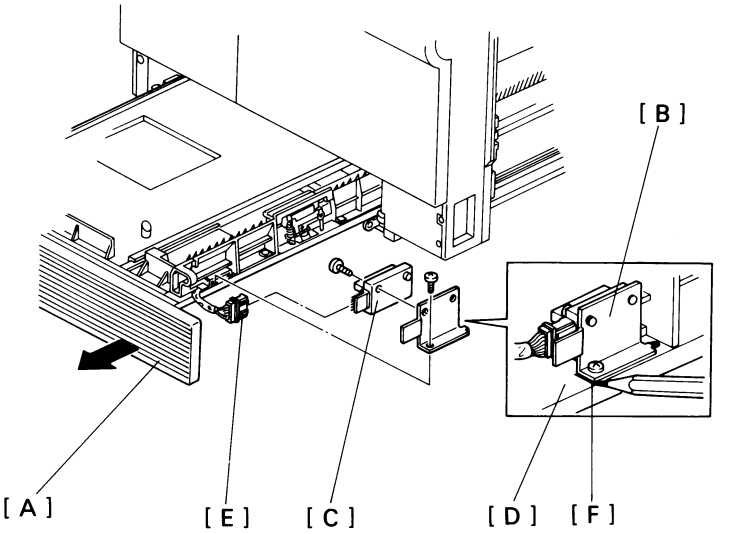
- CASSETTE TRAY SENSOR REPLACEMENT (CASSETTE TRAY) -



1. Remove the rear cover (2 screws).
2. Remove the cassette tray sensor bracket [A] as well as the sensor [B] (1 screw, 1 connector).
3. Replace the sensor (1 screw).

NOTE: Do not overtighten the screw when securing the new sensor.

- PAPER SIZE SENSOR REPLACEMENT (CASSETTE TRAY) -

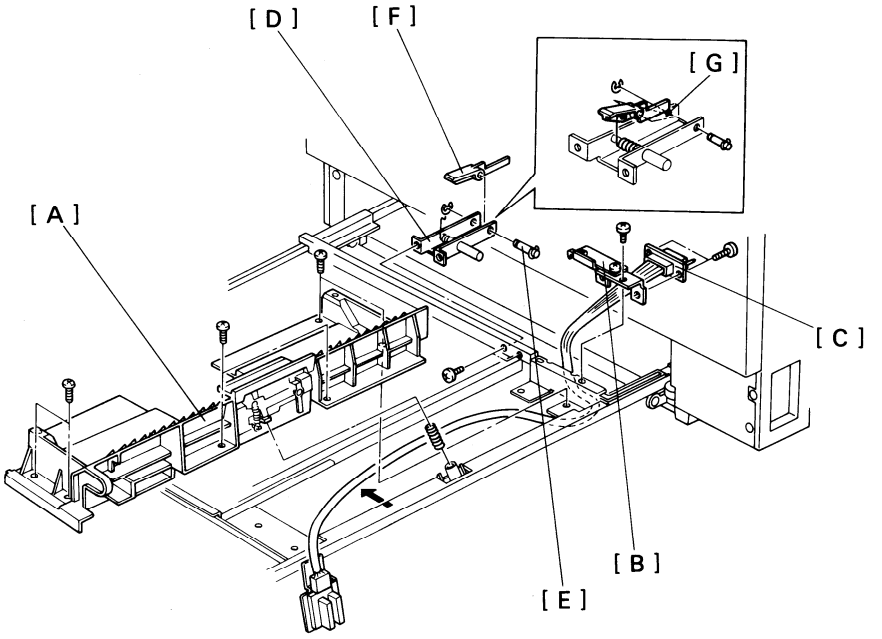


1. Pull out the cassette tray [A].
2. After marking the position of the paper size sensor bracket [B] remove it as well as the sensor [C] (1 screw) on the frame [D].
3. Disconnect the paper size sensor connector [E].
4. Replace the sensor (1 screw).

NOTE: - Do not overtighten the screw when securing the sensor.

- Be sure to align the sensor bracket with the marked line [F].

- PAPER SIZE SENSOR HARNESS REMOVAL (CASSETTE TRAY) -



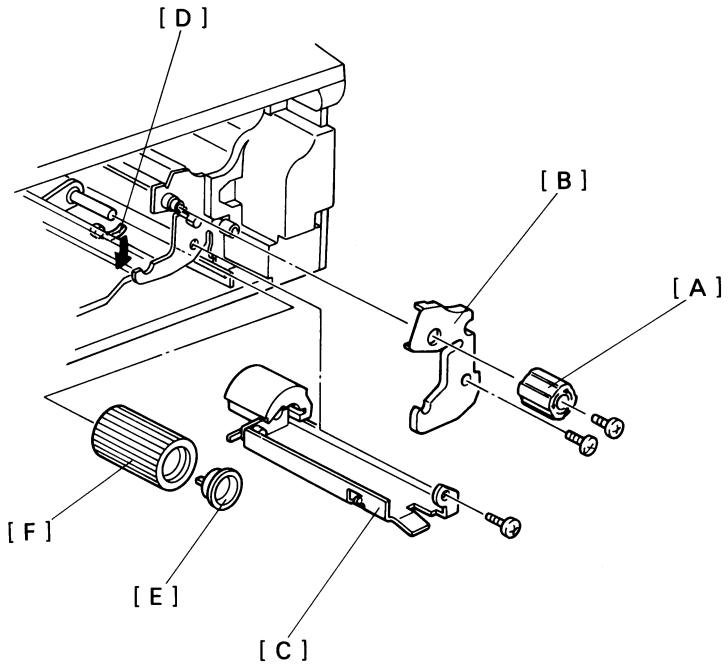
1. Pull out the cassette tray.
2. Remove the paper size sensor bracket and disconnect the paper size sensor connector. (See “Paper Size Sensor Replacement.”)
3. Remove the paper guide plate [A] (6 screws).
4. Remove the terminal bracket [B] (1 screw).
5. Remove the terminal [C] (1 screw).

- CASSETTE TRAY FEELER REMOVAL -

1. Pull out the cassette tray.
2. Remove the sensor feeler bracket [D]
3. Remove the sensor feeler pin [E] (1 E-ring) and the sensor feeler [F].

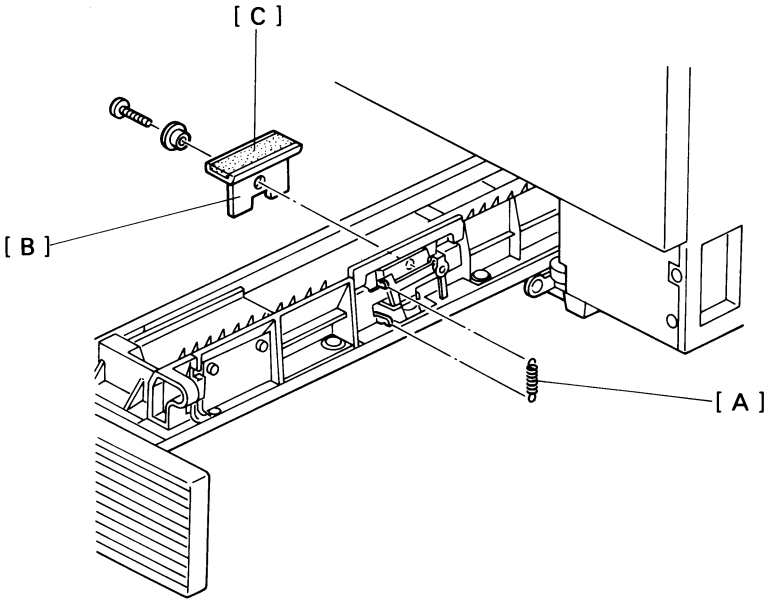
NOTE: When reinstalling the sensor feeler, make sure that the spring [G] is properly positioned as shown.

- FEED ROLLER REPLACEMENT (CASSETTE TRAY) -



1. Open the left and right doors and pull out the cassette tray.
2. Remove the registration roller knob [A] and the small inner cover [B] (1 screw each).
3. Remove the balance wheel bracket [C] (1 screw).
4. While pressing down the paper end sensor feeler [D], remove the hub [E] and the feed roller [F].

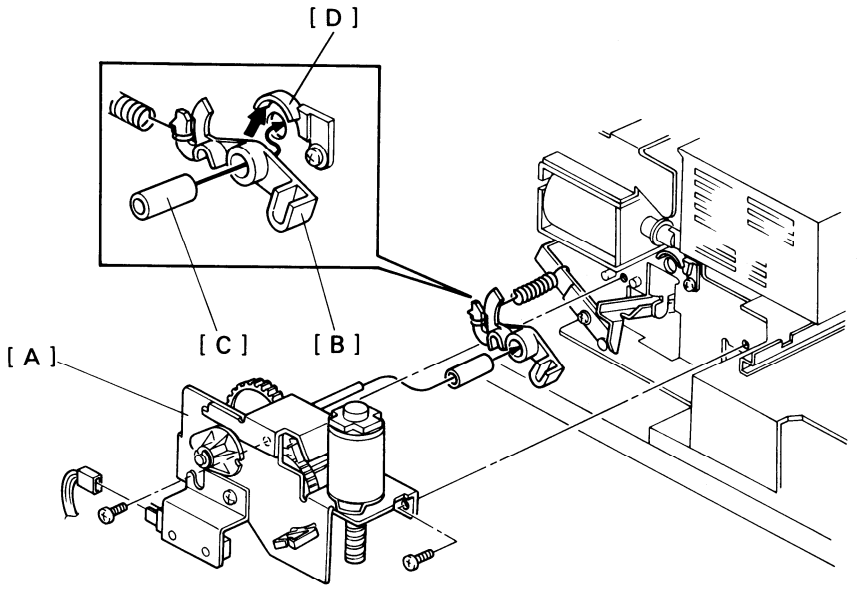
- FRICTION PAD REPLACEMENT (CASSETTE TRAY) -



1. Pull out the cassette tray.
2. Unhook the pressure spring [A].
3. Remove the friction pad holder [B] (1 screw, 1 collar washer).
4. Strip off the old friction pad [C] and clean the surface of the friction pad holder.
5. Install the new friction pad.

NOTE: - Do not touch the surface of the new friction pad with oily fingers.
- Check that the friction pad is 0.05 to 0.35 millimeters below the surface of the front lip.

- LIFT UNIT REMOVAL -

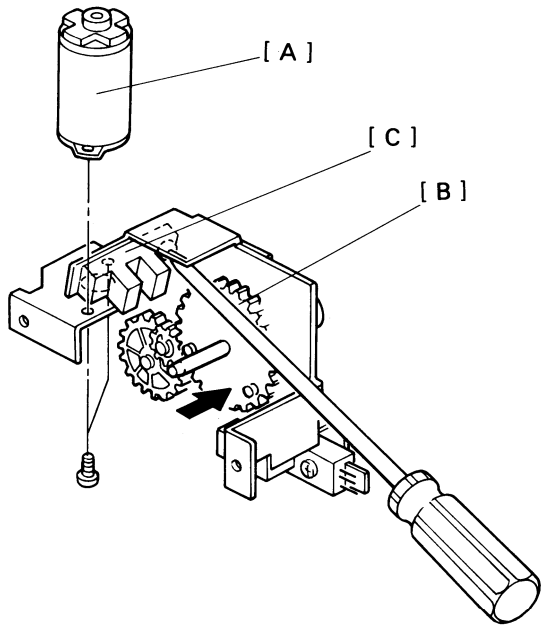


1. Pull out the cassette tray and remove the rear cover (2 screws).
2. Disconnect lift sensor, set sensor, and the lift motor connectors.
3. Remove the lift unit [A] (2 screws).

NOTE: - When reinstalling the lift motor unit, first install the tray lift actuator lever [B] and the collar [C] on the rear guide plate if they were removed.

- **Be sure that the tray lift actuator lever is positioned behind the tray lift guide [D].**

- LIFT MOTOR REPLACEMENT -



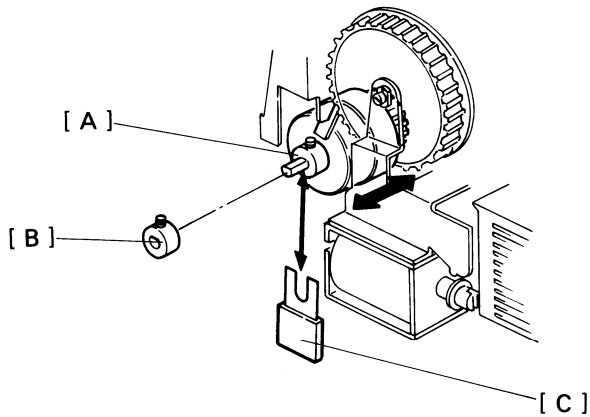
1. Remove the lift unit (See “Lift Unit Removal”.)
2. Remove the lift motor [A] (2 screws).

- LIFT SENSOR REPLACEMENT -

1. Remove the lift unit (See “Lift Unit Removal”.)
2. While pushing the release gear [B] in the direction of the arrow, remove the lift sensor [C] (1 screw).

   NOTE: Do not overtighten the screw when securing the new sensor.

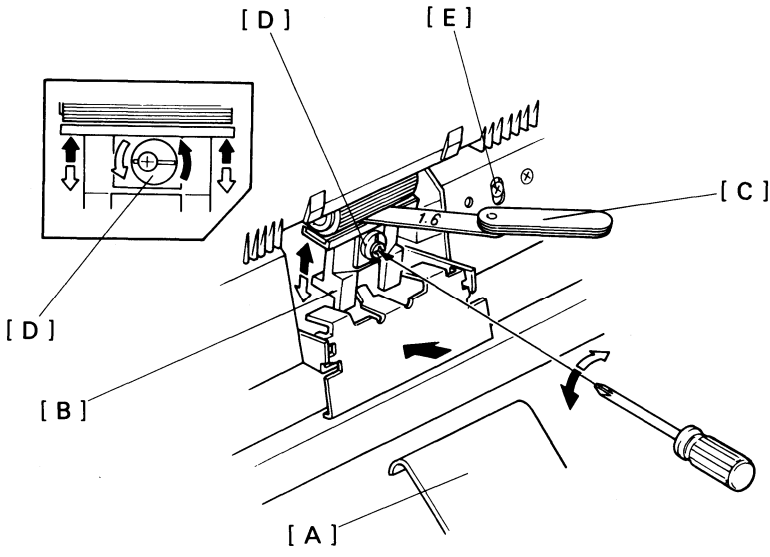
- REGISTRATION CLUTCH ADJUSTMENT -



ADJUSTMENT STANDARD: 0.1 mm (0.004")

1. Remove the rear cover (2 screws).
2. Take the adjusting collar [A] off from the registration roller shaft (1 Allen screw).
3. Loosen the screw in the lock collar [B] on the clutch which is to be adjusted (1 Allen screw).
4. Place the adjusting collar next to the lock collar on the clutch shaft.
5. Position a 0.1 mm gap gauge [C] (Part number #52059101) between the two collars.
6. Push the collars and the thickness gauge back until the clutch presses against the rear plate. Tighten the Allen screw in the adjusting collar.
7. Remove the thickness gauge and move the lock collar against the adjusting collar. Tighten the Allen screw in the lock collar.

- FEED ROLLER/FRICTION PAD GAP ADJUSTMENT -
(1ST AND 2ND FEED STATION)



NOTE: This procedure is required when replacing the friction pad.

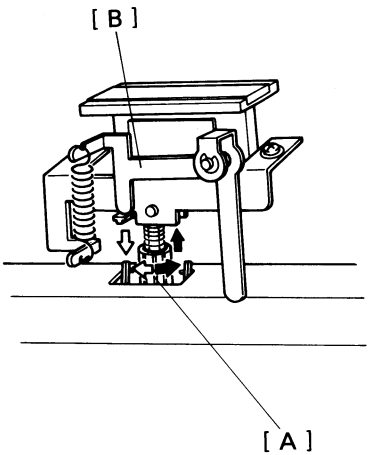
ADJUSTMENT STANDARD: **1.6 ± 0.3 mm (0.06" ± 0.01")**

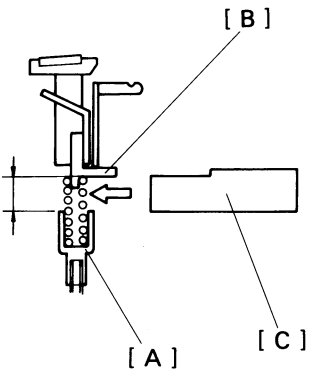
1. Remove the pressure arm [A] (2 screws).
2. Push down the friction pad holder [B] to make the gap between the feed roller and the pad.
3. Measure the gap between the feed roller and the pad using a gap guage [C].
4. If the gap is not within the adjustment standard, adjust the gap by turning the cam roller [D].

   Clockwise: The gap is decreased.
   Counterclockwise: The gap is increased.

   NOTE: Do not adjust the flat screws [E] because they are factory pre-set.

- FEED ROLLER/FRICTION PAD GAP ADJUSTMENT (CASSETTE TRAY) -





ADJUSTMENT STANDARD: **7.3 ± 0.3 mm (0.29” ± 0.01”)**

1. Remove the 1st and 2nd cassettes or large capacity tray if it is installed.

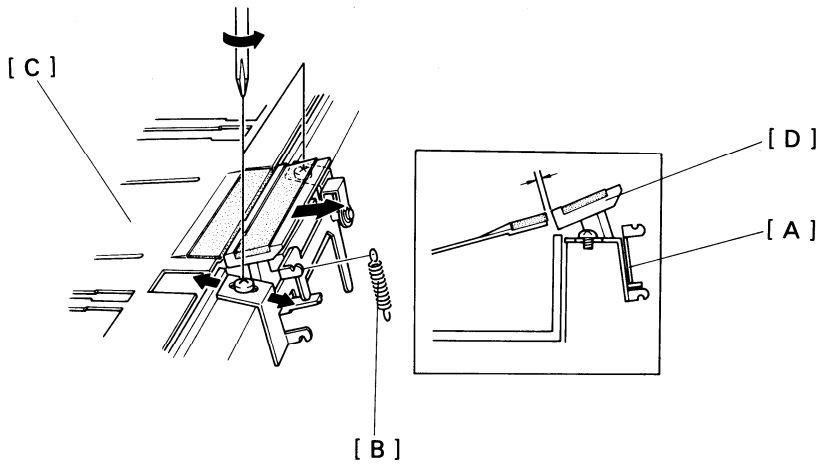
2. Confirm that the cassette tray (3rd cassette) is securely inserted into the machine.

3. Measure the gap between the friction adjusting screw [A] and the friction pad guide [B] using a gap guide [C].

4. If the gap is not within the adjustment standard, adjust the gap by turning the friction adjusting screw.

Clockwise:	The gap is increased.
Counterclockwise:	The gap is decreased.

- FRICTION PAD HOLDER POSITION ADJUSTMENT (CASSETTE TRAY) -

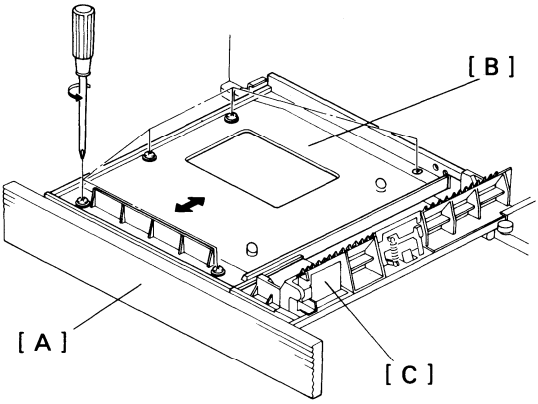


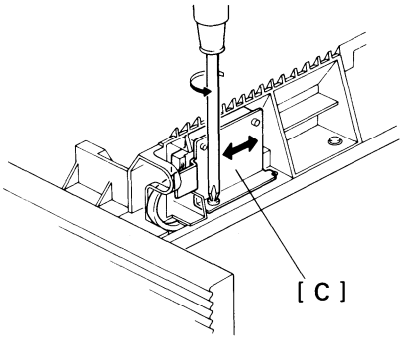
ADJUSTMENT STANDARD: **1.7 ± 0.2 mm (0.07" ± 0.008")**

NOTE: After reinstalling the friction pad bracket [A], this adjustment is necessary to prevent wrinkling at the leading edge of the paper.

1. Remove the pressure spring [B].
2. Temporarily secure the friction pad bracket.
3. Place the empty cassette into the cassette tray.
4. Lift and position the bottom plate [C] as shown in the figure. Push the friction pad holder [D] in the direction of the arrow.
5. Adjust the position of the friction pad bracket so that the gap is within the standard.
6. Tighten the securing screw.

- HORIZONTAL REGISTRATION ADJUSTMENT (CASSETTE TRAY) -





ADJUSTMENT STANDARD: **0 ± 2 mm (0 ± 0.08")**

1. Pull out the cassette tray [A].
2. Remove the cassette.
3. Loosen the 5 screws securing the bottom plate [B] to the cassette tray and reposition the bottom plate. Retighten the screws.
4. Check the registration by making a copy. If the registration is not within specifications perform step 3 again.
5. After adjusting the bottom plate position, perform the following:

   a) Place each sized cassette into the cassette tray and close the tray.

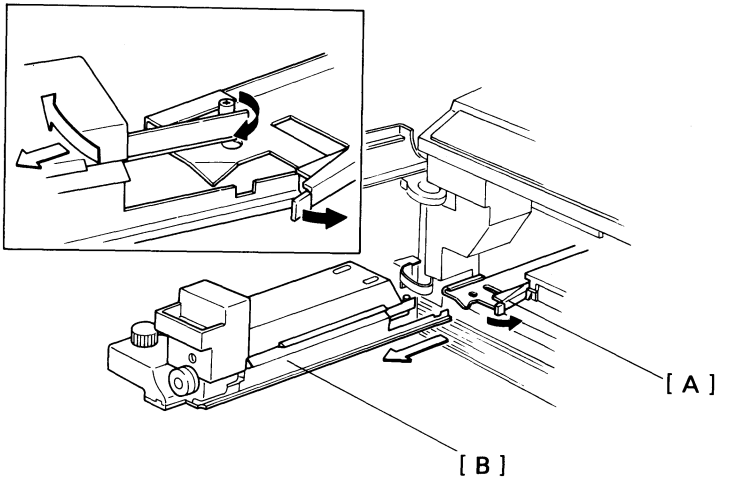
   b) Confirm that the Paper Size indicator lights and correctly indicates the paper size of the cassette inserted in the tray.

   c) If the indication is not correct, adjust the position of the paper size sensor bracket [C].

   d) Continue this procedure until all cassettes are indicated properly.

6. FUSING

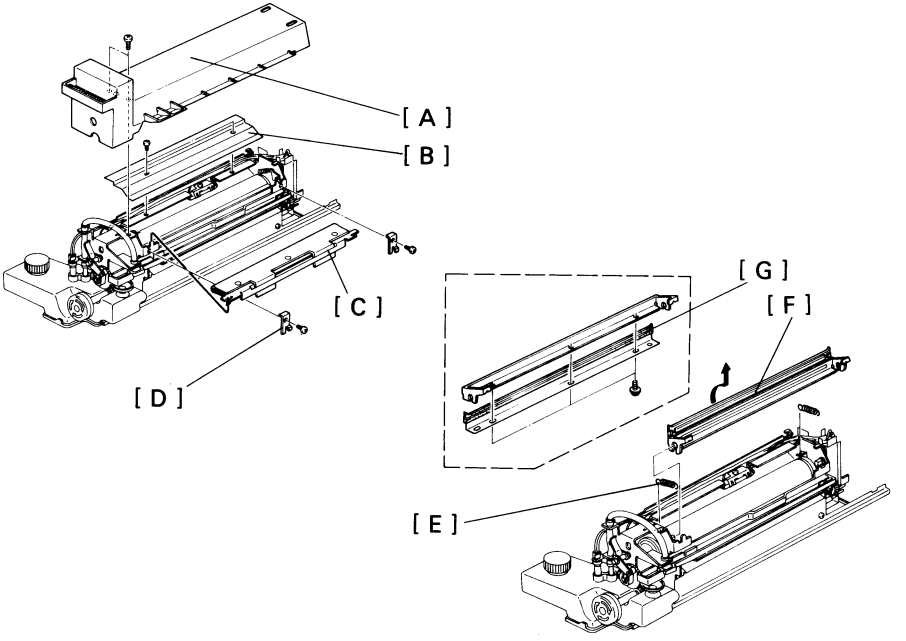
- FUSING UNIT REMOVAL -



1. Open the left and right front doors.
2. Push the fusing unit release lever [A] to the right.
3. Pull out the fusing unit [B] until it is fully extended.
4. Push the fusing unit release lever to the right, move the fusing unit to the left to disengage the stopper pin [C], and remove the unit from the copier.

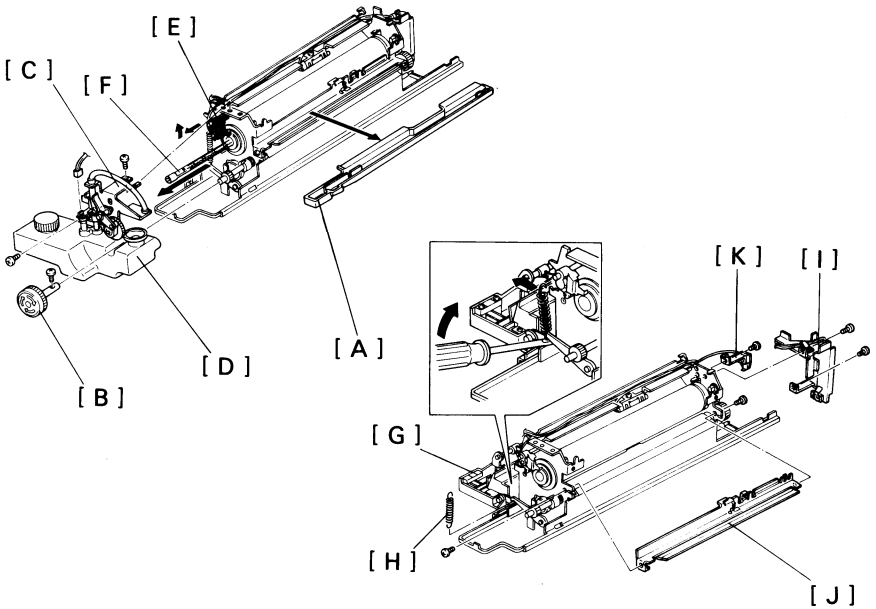
NOTE: Keep the fusing unit in an upright position so that silicone oil does not spill.

- OIL BLADE REPLACEMENT -



1. Remove the fusing unit. (See Fusing Unit Removal.)
2. Remove the fusing unit cover [A] (2 screws).
3. Remove the pressure plate [B] (2 screws).
4. Remove the oil supply pad [C] (2 screws and 2 clamp plates [D]).
5. Unhook the two tension springs [E].
6. Turn and remove the oil blade assembly [F].
7. Remove all screws (3) from the oil blade assembly and remove the blade [G].

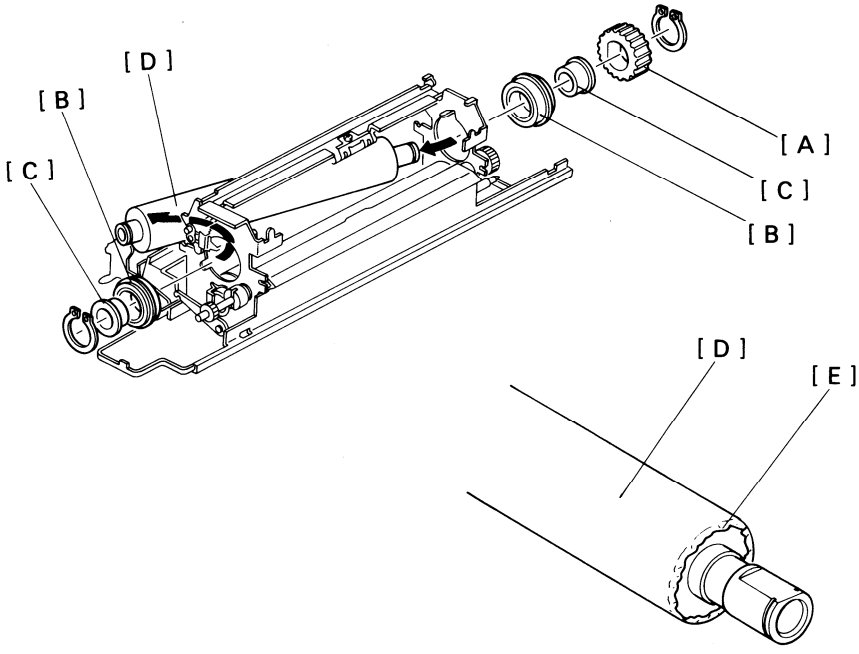
- HOT ROLLER REPLACEMENT -



1. Remove the oil blade. (See “Oil Blade Replacement.”)
2. Remove any excess oil from area surrounding the oil sump [A] and remove the oil sump.
3. Remove the fusing unit knob [B] (1 screw).
4. Remove the oil pump mechanism [C] with the oil tank [D] (2 screws and 1 connector).
5. Rotate the front lamp terminal [E] and remove the fusing lamp [F].

   CAUTION: Do not touch the fusing lamp with oily fingers because oil marks may damage the lamp.

6. Swing down the fusing exit assembly [G] and unhook the pressure springs [H].
7. Remove the harness support bracket [I] (2 screws and 2 hooks).
8. Remove the thermistor bracket [J] (2 screws).
9. Remove the rear lamp terminal [K] (1 screw and 1 hook).



10. Remove the hot roller gear [A], bearings [B], and the collars [C] from both ends of the hot roller [D] (1 C-ring each).

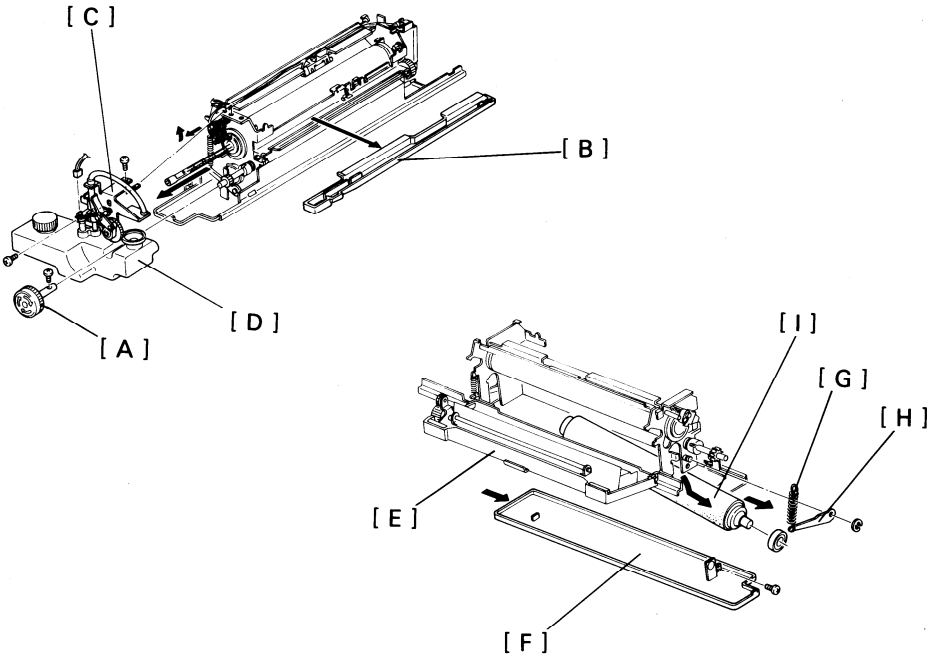
11. Slide the hot roller slightly to the rear and remove the hot roller as shown.

12. Tear the protective paper [E] from the ends of a new hot roller and install it.

13. After the new hot roller is installed, remove the protective paper.

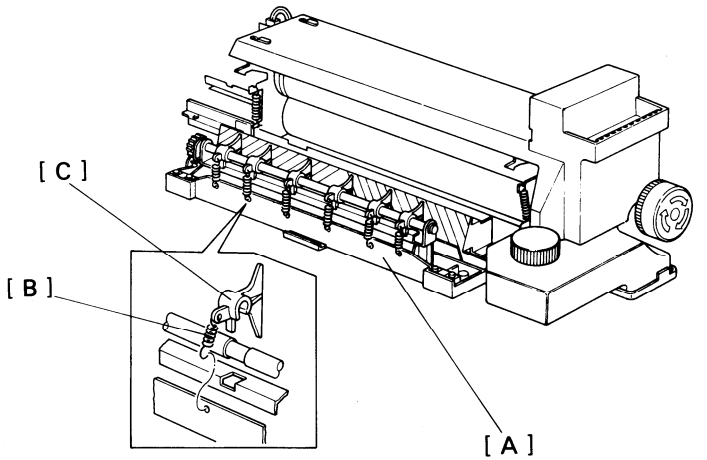
NOTE: When reinstalling the fusing lamp, make sure it does not touch the inside of the hot roller.

- PRESSURE ROLLER REPLACEMENT -



1. Remove the fusing unit and cover (2 screws).
2. Remove the fusing unit knob [A] (1 screw).
3. Remove any excess oil from the oil sump [B].
4. Remove the oil pump mechanism [C] with the oil tank [D] (2 screws and 1 connector).
5. Open and remove the fusing exit assembly [E] (1 E-ring, 1 connector, and 2 springs).
6. Remove the oil pan [F] (4 screws and 4 hooks).
7. Remove the front pressure spring [G].
8. Remove the front pressure lever [H] (1 E-ring).
9. Lift up the upper part of the fusing unit and remove the pressure roller [I].
10. Install the bearings [J] on the new pressure roller.

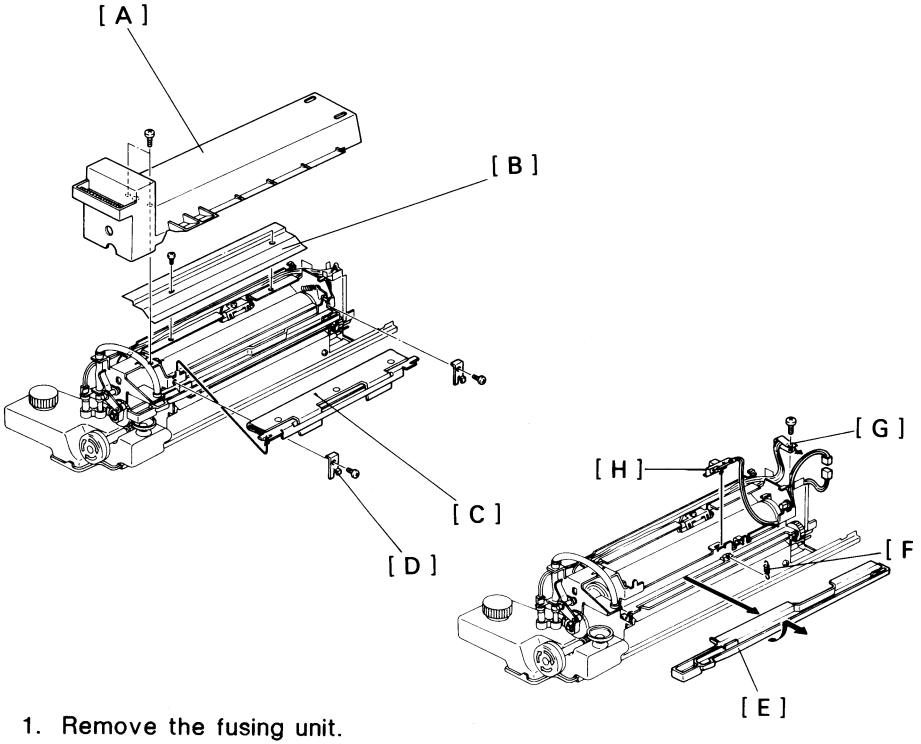
- HOT ROLLER STRIPPER REPLACEMENT -



1. Pull out the fusing unit and open the fusing exit assembly [A].
2. Unhook the springs [B] and remove the hot roller strippers [C].
3. Install new strippers and connect the springs.

NOTE: It is best to replace strippers and springs as a set.

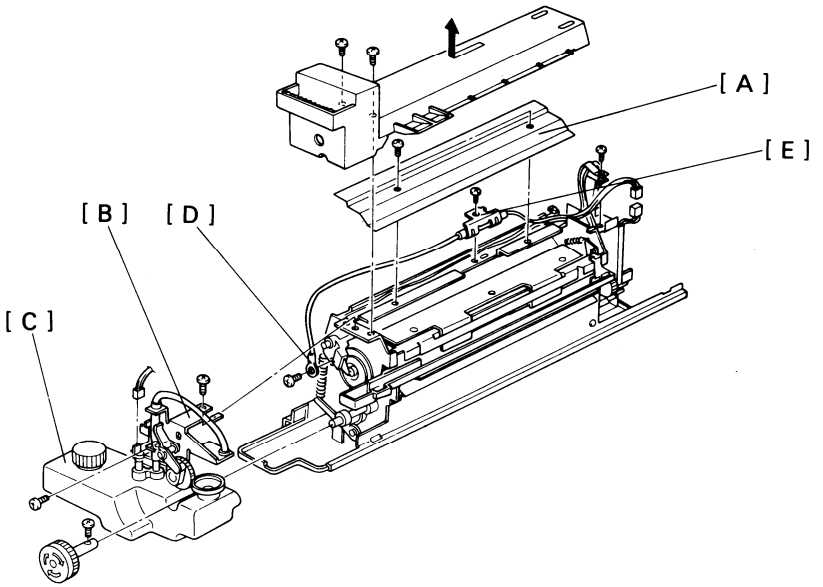
- THERMISTOR REPLACEMENT -



1. Remove the fusing unit.
2. Remove the fusing unit cover [A] (2 screws).
3. Remove the pressure plate [B] (2 screws).
4. Remove the oil supply pad [C] (2 screws and 2 clamp plates [D]).
5. Remove any excess oil from the oil sump and remove the oil sump [E].
6. Unhook the thermistor spring [F].
7. Remove the thermistor wire from the metal wire clamp [G] (1 screw) and remove the thermistor [H] (1 connector).
8. Replace the thermistor and reassemble.

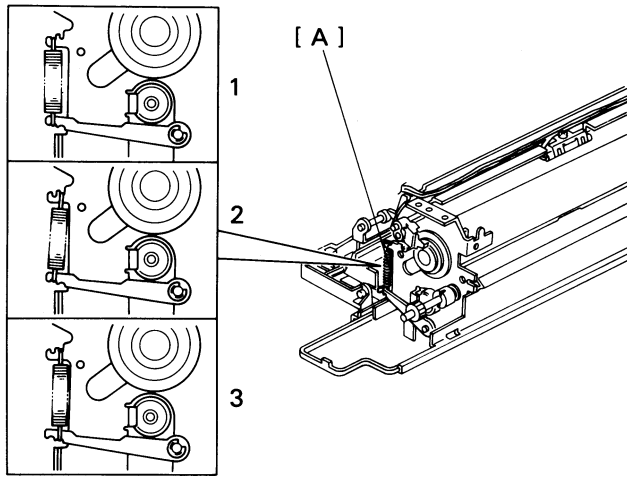
NOTE: - Make sure that the thermistor is properly contacted with the hot roller.

- THERMOFUSE REPLACEMENT -



1. Perform steps 1 to 3 of Thermistor Replacement.
2. Remove the thermofuse bracket [A] (1 screw).
3. Remove the oil pump mechanism [B] with the oil tank [C] (2 screws and 1 connector).
4. Remove the thermofuse wire from the front lamp terminal [D] (1 screw).
5. Disconnect the thermofuse [E] (1 connector) and install the new thermofuse.

- FUSING PRESSURE ADJUSTMENT -

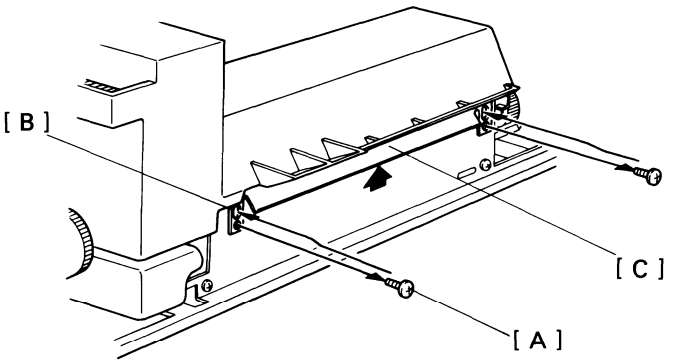


1. Remove the fusing unit.
2. Remove the fusing unit cover (2 screws).
3. Remove the fusing unit knob (1 screw).
4. Remove the oil pump mechanism along with the oil tank (2 screws, 1 connector).
5. Move the pressure springs [A] to the desired position. (See the following table.)

Setting	Fusing Pressure	
1	16.0 kg	
2	19.6 kg	* Factory Setting
3	20.4 kg	

NOTE: Position the front and rear springs in the same position.

- ENTRANCE GUIDE HIGHT ADJUSTMENT -



CAUTION: The entrance guide is very hot. Be carefull when touching it.

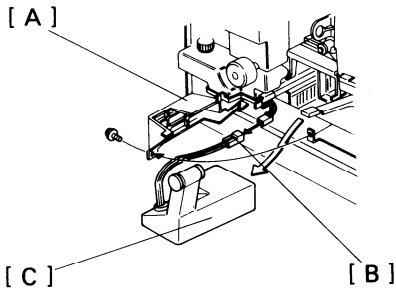
1. Pull out the fusing unit.
2. Remove the 2 screws [A] and reinsert them into the adjusting holes [B].
3. Lightly secure the entrance guide [C].
4. Secure the entrance guide in the upper position.

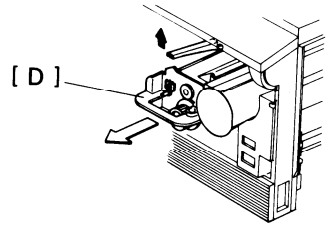
NOTE: - Make sure that both sides of the entrance guide are even.

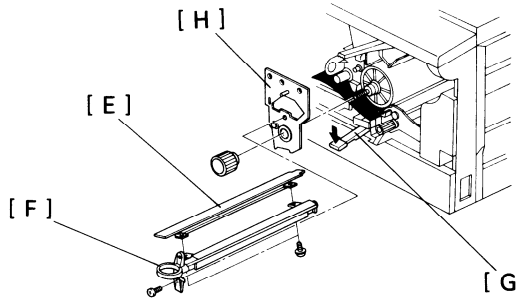
- Factory setting is lower position.

7. TRANSPORT

- TRANSPORT UNIT AND TRANSPORT BELT REMOVAL -

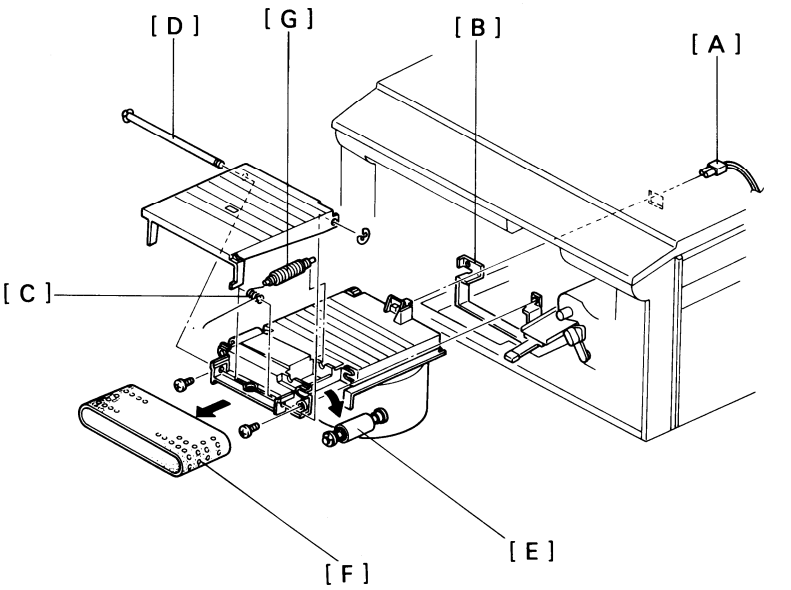






1. Swing the toner collection bottle cover [A] to the left (1 screw).
2. Disconnect the toner overflow sensor connector [B].
3. Remove the toner collection bottle [C].
4. Remove the development unit [D], PTL board [E], and the charge corona unit [F] (1 screw).
5. Lower the T/S corona unit [G].
6. Remove the drum stay [H] (1 knob [I] and 1 screw), the cleaning unit and the drum.

   NOTE: Be sure the protective sleeve is installed before removing the drum.
7. Remove the fusing unit.



8. Remove the rear cover and lower the PCB plate (2 screws each).

9. Remove the transport and separation power pack (1 screw).

10. Disconnect the vacuum fan connector [A] (2p White) just under the main motor.

11. Remove the transport unit from the mounting bracket [B] (2 screws).

12. Slide the transport unit and vacuum fan out of the copier.

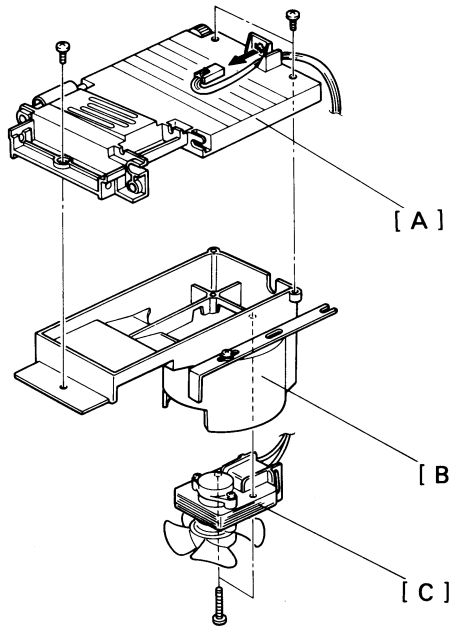
NOTE: When reinstalling the transport unit, be sure the transport gear meshes with the drive gear.

13. Remove the front of the transport unit as shown (1 E-ring, 1 spring [C] and 1 shaft [D]).

14. Pull the right transport roller [E] and transport belt [F] to the right and remove the transport rollers [G].

15. Remove the transport belt as shown.

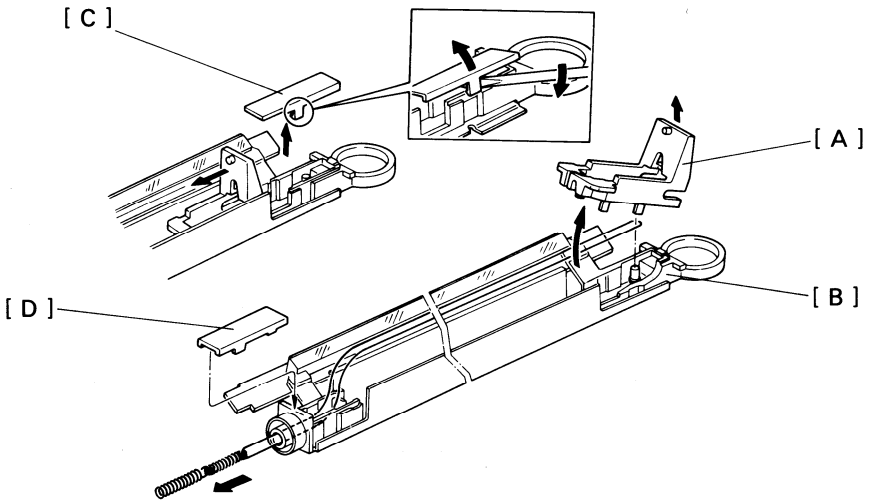
- VACUUM FAN MOTOR REPLACEMENT -



1. Remove the transport belt. (See “Transport Unit and Transport Belt Removal.”)
2. Remove the transport plate [A] from the vacuum fan unit [B] (3 screws and 1 connector).
3. Remove the fan motor [C] (2 screws).

8. CORONA

- CORONA WIRE REPLACEMENT -

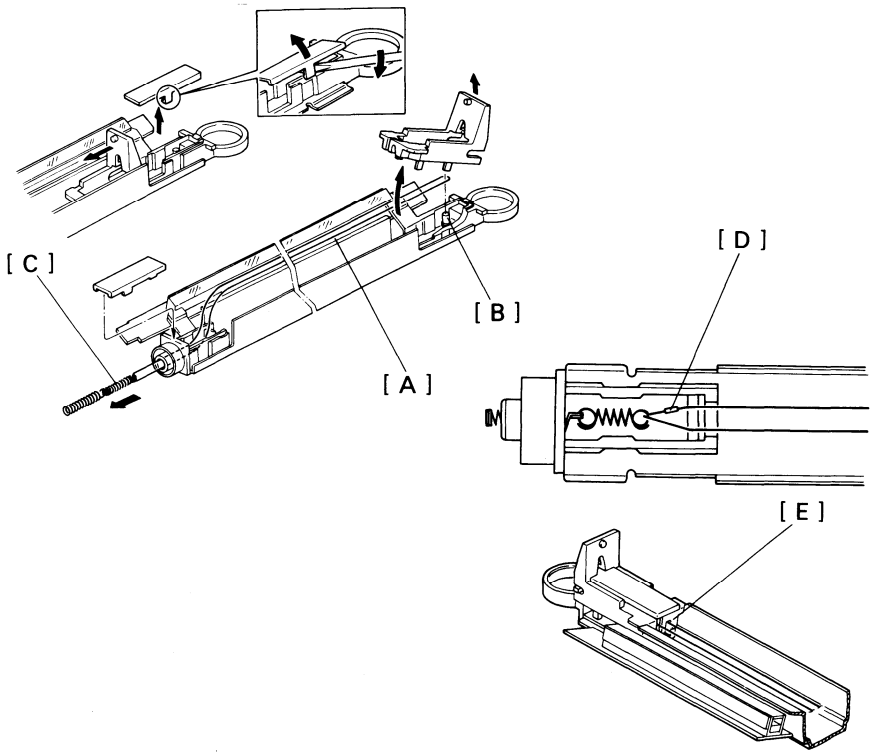


CAUTION: - Do not handle new corona wires with your bare hands. Oil on the wire will cause uneven charge on the drum.

- **Do not rub the corona wires with rough material (sandpaper, etc.) because the corona wires are carbon-coated.**
- **When removing the endblock covers, be careful not to break off the side hooks.**
- **Do not use any solvent to clean the wire as it will cause uneven charge on the drum.**

I. CHARGE CORONA WIRE

1. Slide the wire cleaner [A] away from the front endblock [B] as shown.
2. Remove the front [C] and rear [D] end block covers.
3. Slide the wire cleaner back to the front end and remove it.



4. Unhook the corona wire [A] from the front anchor post [B] by pulling in the direction of the arrow using a small screw driver.

5. Remove the old corona wire as directed by the arrows.

6. Clean the endblocks, the covers, and the corona unit casing with a blower brush and dry cloth.

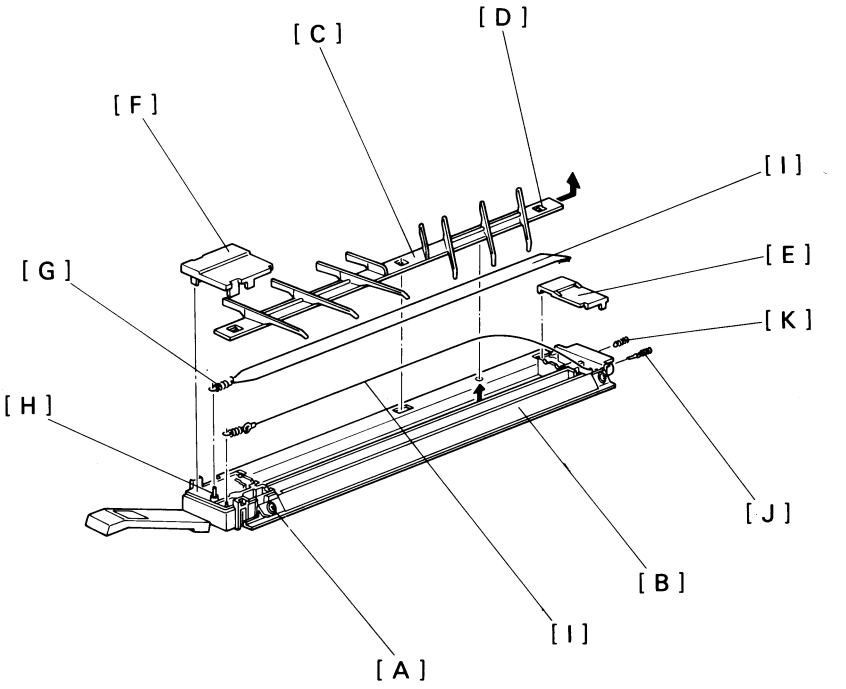
7. Hook the new corona wire onto the tension spring [C]

8. Hook the other end of the wire onto the front anchor post using a small screw driver.

   CAUTION: When installing the corona wire, the wire junction [D] should be positioned inside the rear endblock.

9. Reassemble the charge corona unit. Make sure that the corona wire is positioned between the cleaner pads [E].

II. T/S CORONA WIRES



CAUTION: The eccentric cams [A] are used in the production line only to adjust the gap between the guide mylar [B] and the selenium drum.

1. Lower the transport and separation unit then remove it.

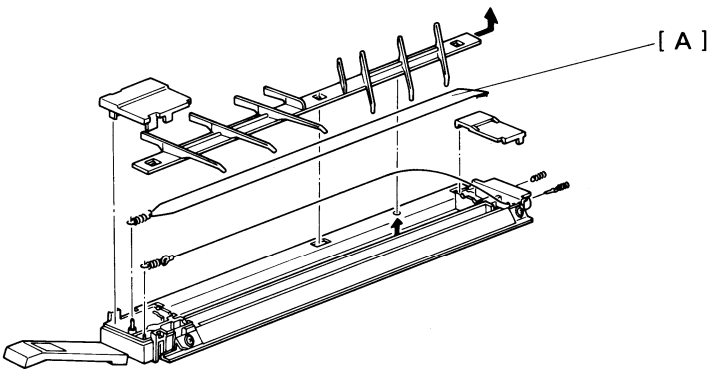
2. Slide the corona paper guide [C] to the rear, by pushing up the guide stopper [D] from underneath. Then, remove the guide from the corona unit.

3. Remove the front [E] and rear [F] endblock covers.

4. Unhook the tension springs [G] from the front anchor posts [H] and remove the old corona wires [I].

5. Clean the corona paper guide, the endblocks and covers, and the corona unit casing with a blower brush and dry cloth.

6. Thread the small eyelet [J] of the new transfer corona wire through the hole in the rear endblock and hook it onto the terminal spring [K].



7. Hook the tension spring onto the other end of the corona wire. Then hook the tension spring onto the front endblock anchor post.

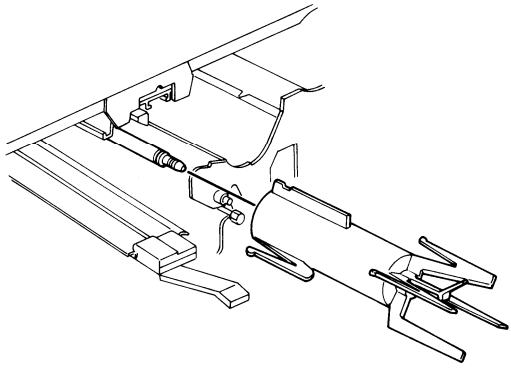
8. Insert the wire junction [A] of the new separation corona wire through the hole in the rear endblock and hook the terminal spring onto the nearby wire junction.

9. Hook the tension spring onto the other end of the loop and then hook the spring to the front endblock anchor post.

CAUTION: The separation corona wire should be properly positioned on the grooves of the front and rear endblocks.

10. Reset the endblock covers and the corona paper guide.

- DRUM CURRENT ADJUSTMENT -



NOTE: The drum currents vary with environmental conditions such as humidity and atmospheric pressure. Generally it is not necessary to adjust the drum currents because they have already been adjusted for a range of environments in the factory.

Drum current adjustment may be required when there are problems with paper separation, incomplete toner transfer, or image density.

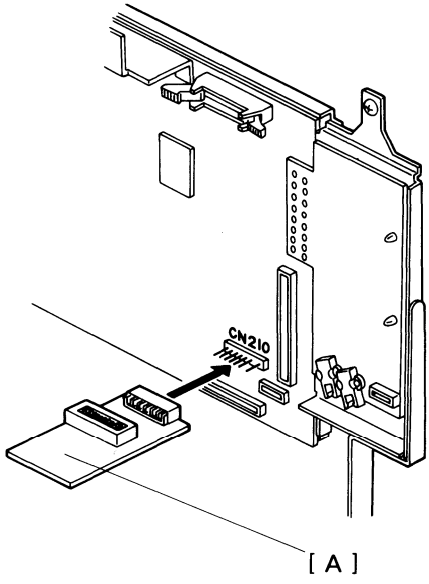
CAUTION: - Make sure that the main switch is turned off when you change the range on the digital multimeter. If it is not turned off, the multimeter may be damaged.

- High voltage is applied to the corona wires when the main switch is turned on.

I. PREPARATION

1. Turn off the main switch and remove the following parts:

- Development unit
- Charge corona unit (1 screw)
- Drum stay (1 screw)
- Toner collection bottle
- Cleaning unit
- Drum flange
- Drum - should be covered with a shielding sleeve
- Drum guide
- T/S corona unit



2. Clean or replace each corona wire. Also clean the corona units and the cleaning unit.

3. Actuate the front safety switch.

4. Remove the rear cover (2 screws).

5. Plug the switching board into connector CN210 of the main board as shown.

NOTE: All the switches on the switching board [A] should be off.

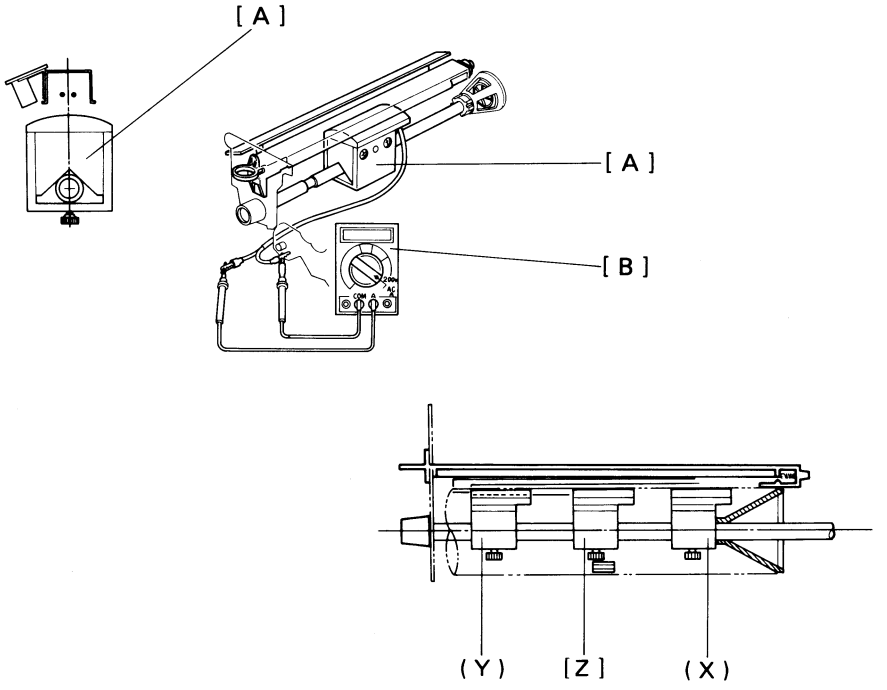
6. Install the drum shoe and adapter on the drum shaft with the lip to the rear.

7. Route the shoe lead wire out through the development unit opening.

8. Connect the drum shoe and the digital multimeter leads as shown in the next page. Positive lead to the red lead clip. Negative lead and the black lead clip to the machine ground.

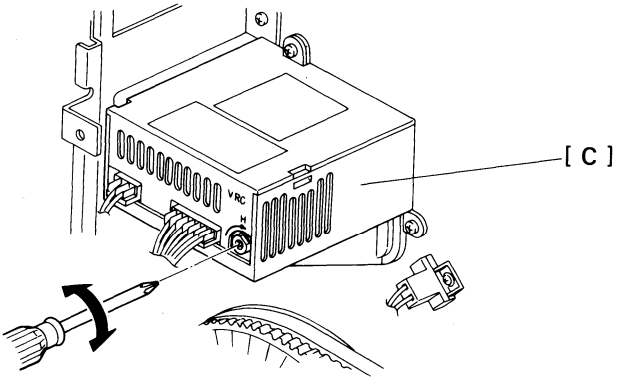
9. Open the Manual Feed table to keep the Start key red even if the machine is warmed up.

II. CHARGE CORONA



OPTIMUM ADJUSTING VALUE: DC +42.4 ± 0.2 µA

1. Slide the drum shoe [A] to its rear limit as shown (X)
2. Position the drum shoe so that the axis of the current sensing plate is aligned with the charge corona wire as shown.
3. Reinstall the drum stay (1 screw and 1 knob) and the charge corona unit.
4. Select the dc 200 µA range of the digital multimeter [B].
5. Turn on SW 8 of the switching board.
6. Turn on the main switch and note the reading. (Wait 30 seconds for the current to stabilize.)
7. Turn off the main switch, move the drum shoe to the front as shown (Y), and repeat steps 3 to 5.



8. Adjust the front corona wire height adjusting screw if the two readings differ. The difference between front and rear should not be more than 0.2 μA.

   NOTE: - Turn the adjusting screw clockwise to increase the reading.

   - Turn it counterclockwise to decrease the reading.

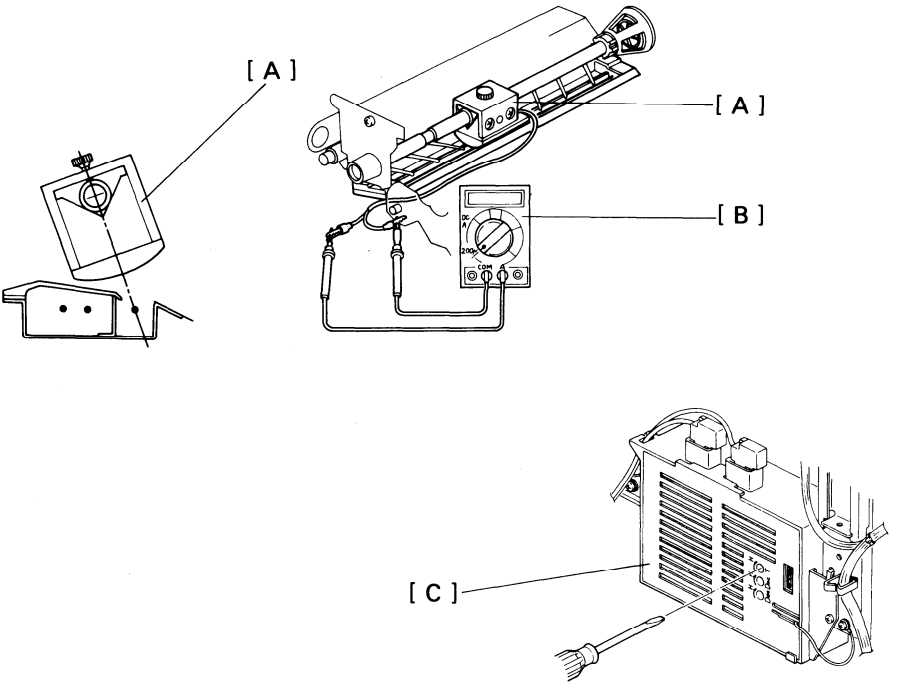
   - After adjusting the front side, confirm the rear reading once again.

9. Turn off the main switch and position the drum shoe on the center of the shaft (Z). (The ID sensor is positioned in the the center of the shaft).

10. Turn on the main switch and adjust the charge corona current by turning “VRC” on the power pack - C/B [C].

11. Turn off the main switch and SW 8.

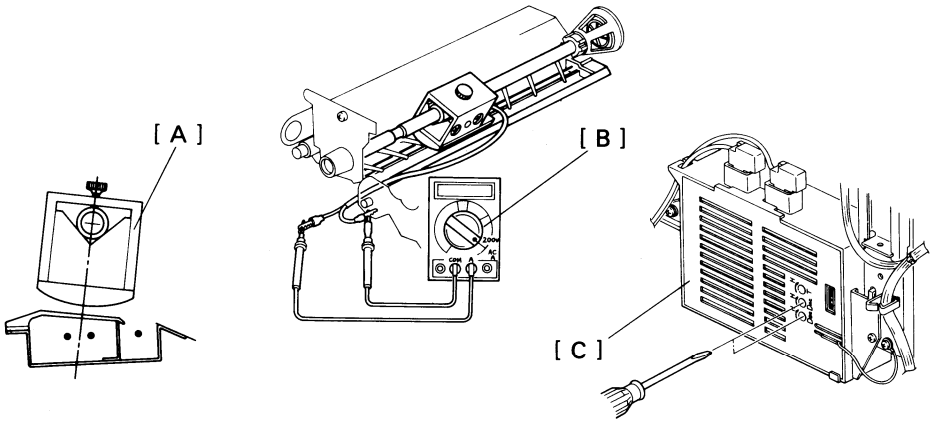
III. TRANSFER CORONA



OPTIMUM ADJUSTING VALUE: DC +18.6 ± 0.4 µA

1. Reinstall the T/S corona unit and position the drum shoe [A] at the center of the shaft so that the axis of the current sensing plate is aligned with the transfer corona wire as shown.
2. Reinstall the cleaning unit and the drum stay (1 screw and 1 knob).
3. Select the dc 200 µA range of the digital multimeter [B].
4. Turn on SW 3 of the switching board.
5. Turn on the main switch and adjust the transfer corona current by turning "T" on the power pack - T/S [C]. (Wait 30 seconds for the corona current to stabilize.)
6. Turn off the main switch and SW 3.

IV. SEPARATION CORONA



OPTIMUM ADJUSTING VALUE: AC 39.2 ± 1.5 µA
DC -2.7 ± 0.3 µA

1. Position the drum shoe [A] at the center of the shaft so that the axis of the current sensing plate is aligned between the separation corona wires as shown.

2. Reinstall the drum stay (1 screw and 1 knob) and return the T/S corona unit to its original position.

   NOTE: The cleaning unit should be also installed at this time.

3. Turn on SW 4 on the switching board.

4. Select the dc 200 µA range of the digital multimeter [B].

5. Turn on the main switch and adjust the separation dc current by turning “DDC” on the power pack - T/S [C]. (Wait 30 seconds for the corona current to stabilize.)

6. Turn off the main switch and select the ac 200 µA range of the multimeter.

7. Turn on the main switch and adjust the separation ac current by turning “DAC” on the power pack - T/S. (Wait 30 seconds for the corona current to stabilize.)

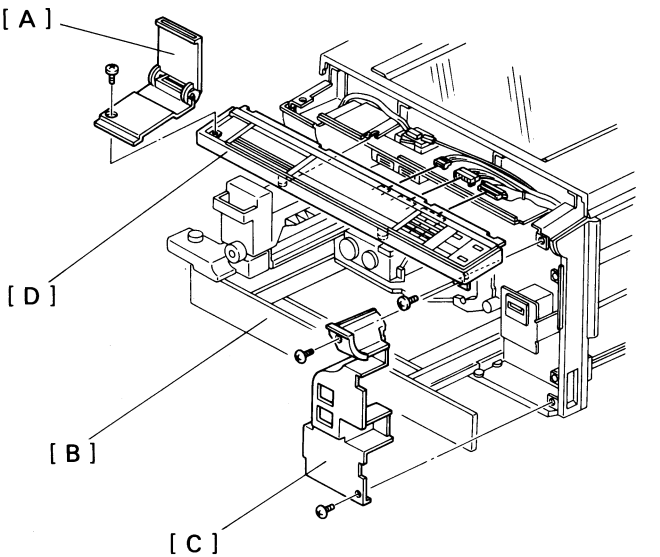
8. Turn off the main switch.

9. Repeat steps 4 to 8 until both the dc and ac corona currents are within in the optimum ranges.

10. Turn off the main switch and SW 4.

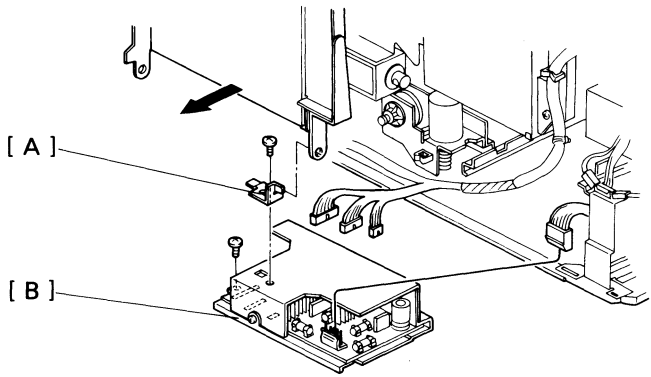
9. OTHERS

- ORERATION PANEL REMOVAL -



1. Remove the DIP switch cover [A] under the instruction cards (1 screw).
2. Open the right and left front doors.
3. Pull out the cassette tray [B] and remove the right inner cover [C] (3 screws).
4. Remove the operation panel [D] (2 screws and 3 connectors).

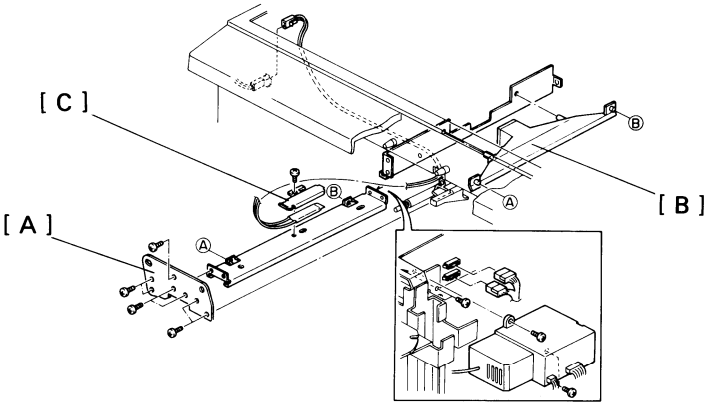
- POWER SUPPLY UNIT REMOVAL -



1. Remove the rear cover (2 screws).
2. Remove the main board bracket [A] (1 screw).
3. Remove the power supply unit [B] (1 screw and 4 connectors).

NOTE: **When reinstalling the power supply cover, be sure the wire harnesses are properly placed within their holders.**

- DRUM HEATER REMOVAL -



1. Turn off the main switch.
2. Open the left and right front doors and remove the following parts:

   - Development unit
   - Charge corona unit (1 screw)
   - Drum stay (1 screw)
   - Toner collection bottle
   - Cleaning unit
   - Drum flange
   - Drum - should be covered with a shielding sleeve
   - Drum guide
   - T/S corona unit

3. Remove the left inner cover (2 screws), the center inner cover (6 screws), and the rear cover (2 screws).
4. Disconnect the lens drive motor connector and the 2nd drive motor connector.
5. Remove the main charge power pack (2 screws and 1 connector).
6. Remove the front drum support bracket [A] (7 screws).
7. Remove the duct inlet [B].
8. Remove the main charge unit holder from the rear of the machine (2 screws).
9. Replace the drum heater [C] (1 screw).

NOTE: When installing the drum heater, be sure that the duct outlet is properly positioned.

10. COPY IMAGE

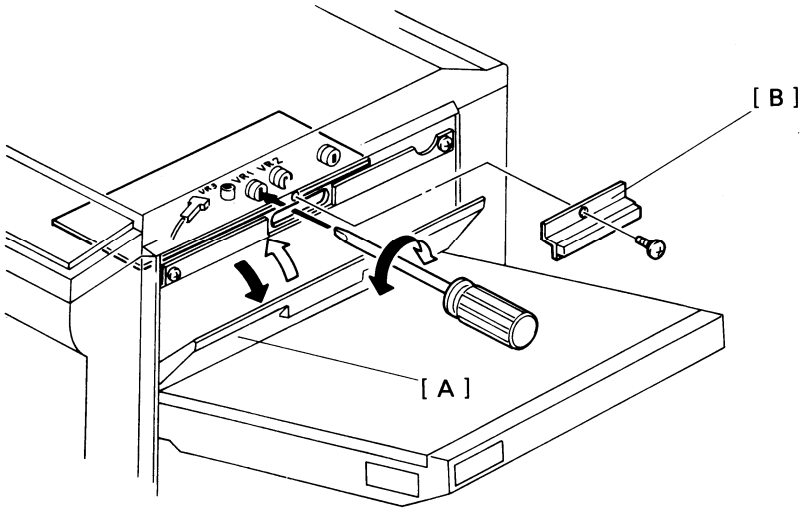
- LIGHT INTENSITY ADJUSTMENT -

NOTE: - This adjustment should be done when the rest time compensation of the bias voltage is 0V. if the main power switch has just been turned on.

- Auto ID sensor adjustment must be done after light intensity adjustment.

ADJUSTMENT STANDARD: Level 2 of the gray scale on the OS-A3 chart should be just visible on the copy when the 4th level of the density control is selected.

1. Clean the optics (mirrors, lens, reflectors, exposure glass, toner shield glass).
2. Turn on the main switch and allow it to warm up.
3. Set the image density level at the No. 4 position and make 11 test copies of the OS-A3 test chart.
4. Confirm that the level 2 of the gray scale is just visible on the 11th copy. If the image density is not correct, proceed to steps 5 to 10.



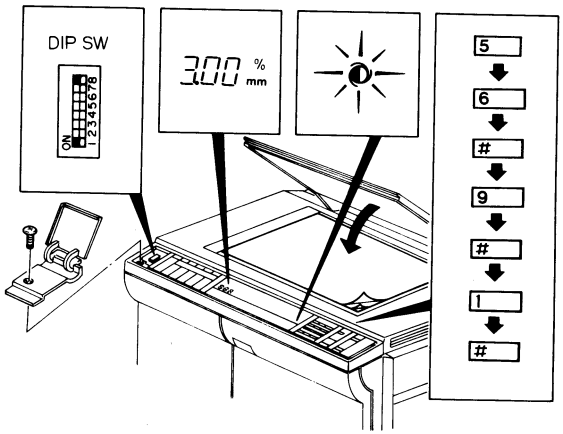
5. Open the manual feed table [A].
6. Remove the magnetic catch bracket [B] (1 screw).
7. Adjust VR1 on the lamp regulator board to achieve properly illuminated copies.
8. Hold the manual feed table closed and make test copies.
9. Confirm that the image density is within the standard.

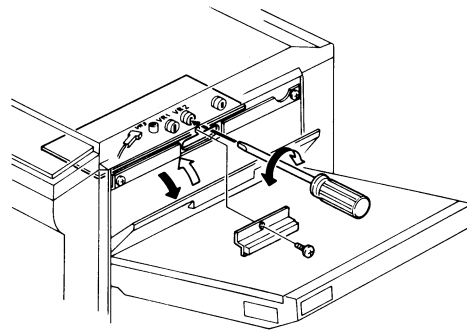
   NOTE: - If the test copies are made within 3 minutes after making previous copies, check the image density on the 4th copy.

   - **If it is over 3 minutes, check the image density on the 6th copy.**
   - **Check and adjust the light intensity at every visit.**

10. Turn off the main switch and reassemble.

- AUTO ID SENSOR ADJUSTMENT -





ADJUSTMENT STANDARD: +3 dc ± 0.06 volts

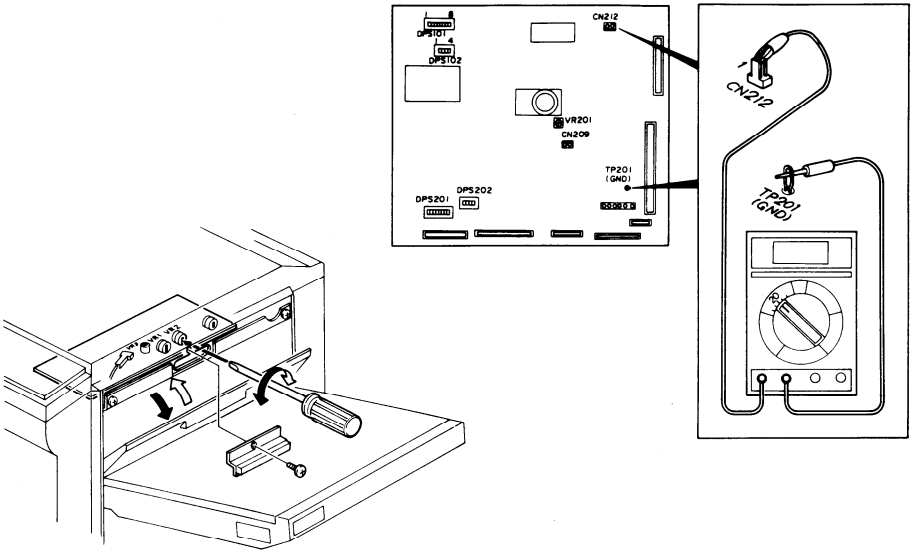
- Method A: Using the CPU -

1. Perform the light intensity adjustment before performing the Auto ID Sensor Adjustment.
2. Remove the DIP switch cover (1 screws).
3. Turn off the main switch and turn on DIP switches No. 1-1 and No. 1-8.
4. Open the manual feed table and remove the magnet catch bracket (1 screws). The manual feed table must now be held closed during machine operation.
5. Turn on the main switch and allow the copier to warm up.
6. Select the Auto ID mode.

7. Place 5 sheets of A3 (11" x 17") paper on the exposure glass.
8. Enter "56" using the numeral keys, then press the enter key.
9. Enter "9" using the numeral keys, then press the enter key.
10. Enter "1" using the numeral keys, then press the enter key. Then the ADS voltage will be displayed on the magnification indicator for 10 seconds.
11. Adjust the Auto ID sensor by turning VR2 on the lamp regulator board.

    NOTE:
    - **Continue the adjustment procedure until the value is within specifications.**
    - **When adjusting the Auto ID sensor, use the monitor reading after the 3rd scanning operation.**

12. Turn off the main switch and the DIP switches, then reassemble.



- Method B: Using a Digital Multimeter -

Perform steps 1 and 2 of method A.

1. Confirm that the main switch is off and turn on DIP SW No. 1-1 on the operation panel.

2. Open the manual feed table and remove the magnetic catch bracket (1 screws).

3. Remove the rear cover (2 screws).

4. Hook up the multimeter leads as follows:

   Note: Hook up the positive lead using a crocodile clip as shown.

   Positive lead to pin 1 of CN212 on the main board
   Negative lead to TP 201 (GND) and select the 20-volt range on the multimeter.

5. Close the manual feed table.

7. Place 5 sheets of paper (A3 or 11" x 17") on the exposure glass.

8. Turn on the main switch and select the Auto ID mode, then enter "99" using the numeral keys.
   Press the Start key after the copier warms up.

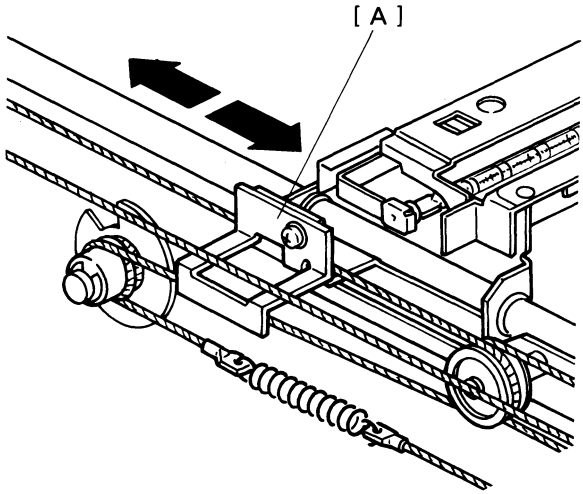
9. Adjust the Auto ID sensor by turning VR2 on the lamp regulator board.

   NOTE: - Open and close the manual feed table and press the start key at each adjustment.
   - Adjust the Auto ID sensor after the 3rd copy cycle has been completed.

10. Press the C/S button to stop the copier.

11. Turn off the main switch and DIP SW No 1-1, then reassemble.

- HORIZONTAL MAGNIFICATION ADJUSTMENT -



ADJUSTMENT STANDARD: ± 0.5% (Full Size)

1. Remove the rear cover (2 screws).
2. Remove the two mounting studs and eight screws securing the upper cover.
3. Lift the back edge of the upper cover and loosen the wire clamp [A] (1 screw).
4. Move the clamp to the right to enlarge the copy image. Move it to the left to make the copy image smaller. (Viewed from the rear side.)

- VERTICAL MAGNIFICATION ADJUSTMENT -

- Vertical Magnification -
DPS102 (On the Main Board)

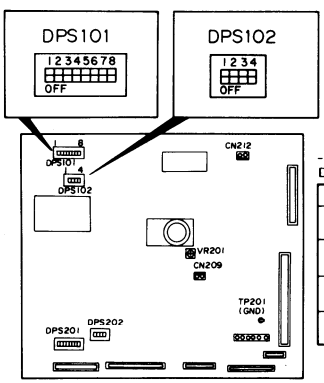
SW.NO.	0:OFF				1:ON			
2	1	1	1	1	0	0	0	0
3	1	1	0	0	1	1	0	0
4	1	0	1	0	1	0	1	0

Narrower ◄——► Wider
2%/Step

ADJUSTMENT STANDARD: **± 1%**

Adjust the vertical component of magnification (scanner forward velocity) using DIP switches 102-2, -3 and -4 on the main board as per the table.

- LEAD EDGE REGISTRATION ADJUSTMENT -



- Lead Edge Registration -
DPS101 (On the Main Board)

SW.NO.	0:OFF								1:ON							
1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
2	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
3	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
4	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1

Narrower ◄——► Wider
1.0mm/Step

ADJUSTMENT STANDARD: **0 ± 2 mm (0 ± 0.08")**

1. Place a 150 mm scale on the exposure glass, aligning it with the left scale.
2. Make 3 copies with the ID level at the No. 7 position.
3. Adjust the lead edge registration using DIP switches 101-1, -2, -3, and -4 on the main board as per the table.

- LEAD EDGE BLANK MARGIN ADJUSTMENT -

- Lead Edge Margin -
DPS101 (On the Main Board)

SW.NO.	0:OFF				1:ON											
5	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
6	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
7	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
8	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1

Narrower ← 0.8mm/Step → Wider

NOTE: This adjustment should be done after Lead Edge Registration Adjustment.

ADJUSTMENT STANDARD: 3.5 ± 2.5 mm (0.14” ± 0.1”)

Adjust the lead edge blank margin using DIP switches 101-5, -6, -7, and -8 on the main board as per the table.

SECTION 4

ELECTRICAL DATA

CONTENTS

1. MAIN BOARD SCHEMATIC (MAIN CONTROL)

2. MAIN BOARD SCHEMATIC (OPTIC CONTROL)

3. OPERATION PANEL BOARD SCHEMATIC

4. PAPER FEED CONTROL BOARD SCHEMATIC

5. DC POWER SUPPLY BOARD SCHEMATIC

6. LAMP REGULATOR SCHEMATIC

7. FUSING LAMP DRIVE BOARD SCHEMATIC

8. DF MAIN BOARD SCHEMATIC

9. SORTER CONTROL BOARD SCHEMATIC

10. LCT CONTROL BOARD SCHEMATIC

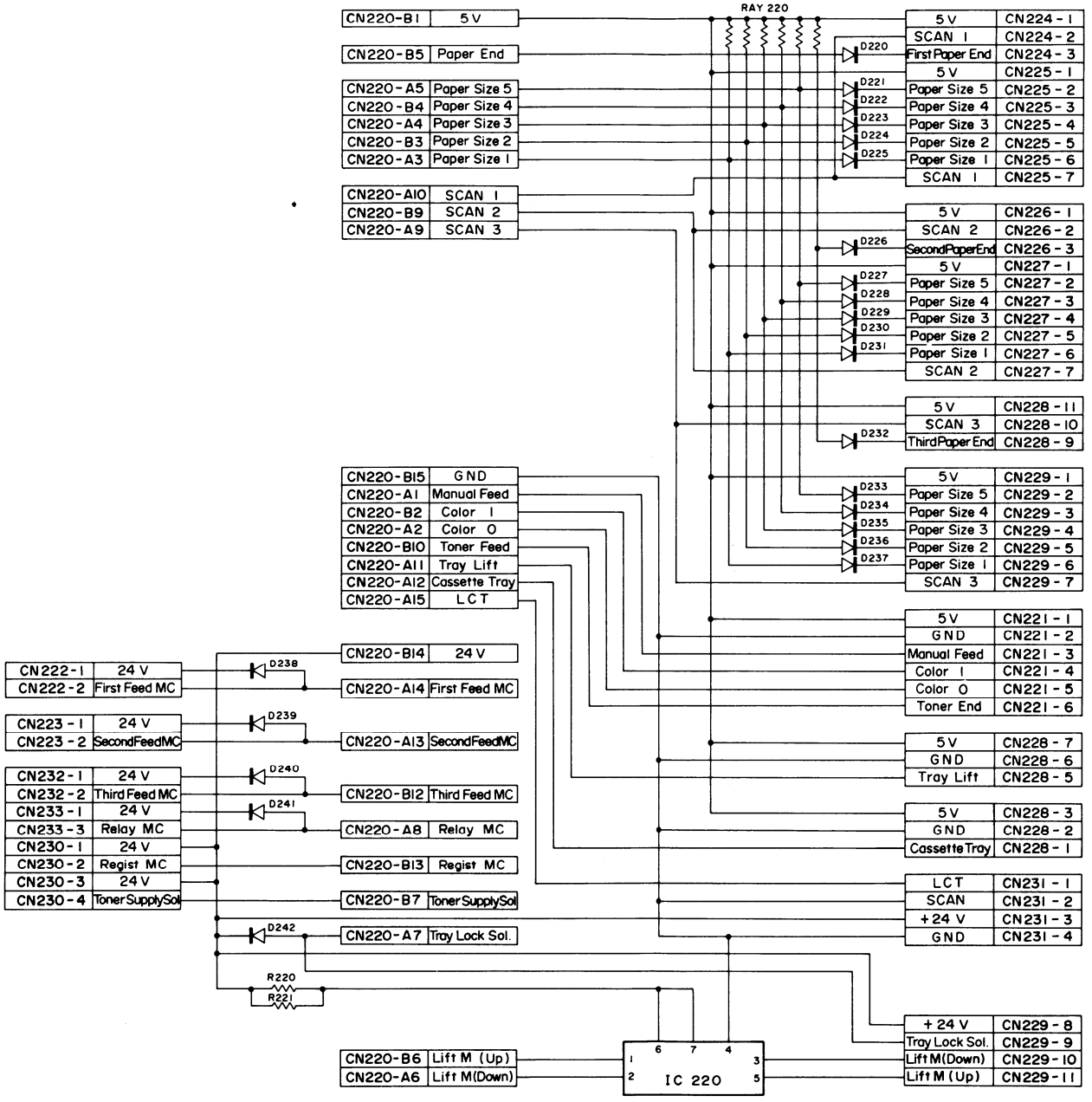
11. INTERFACE BOARD SCHEMATIC (TYPE-E)

12. EDITOR BOARD SCHEMATIC

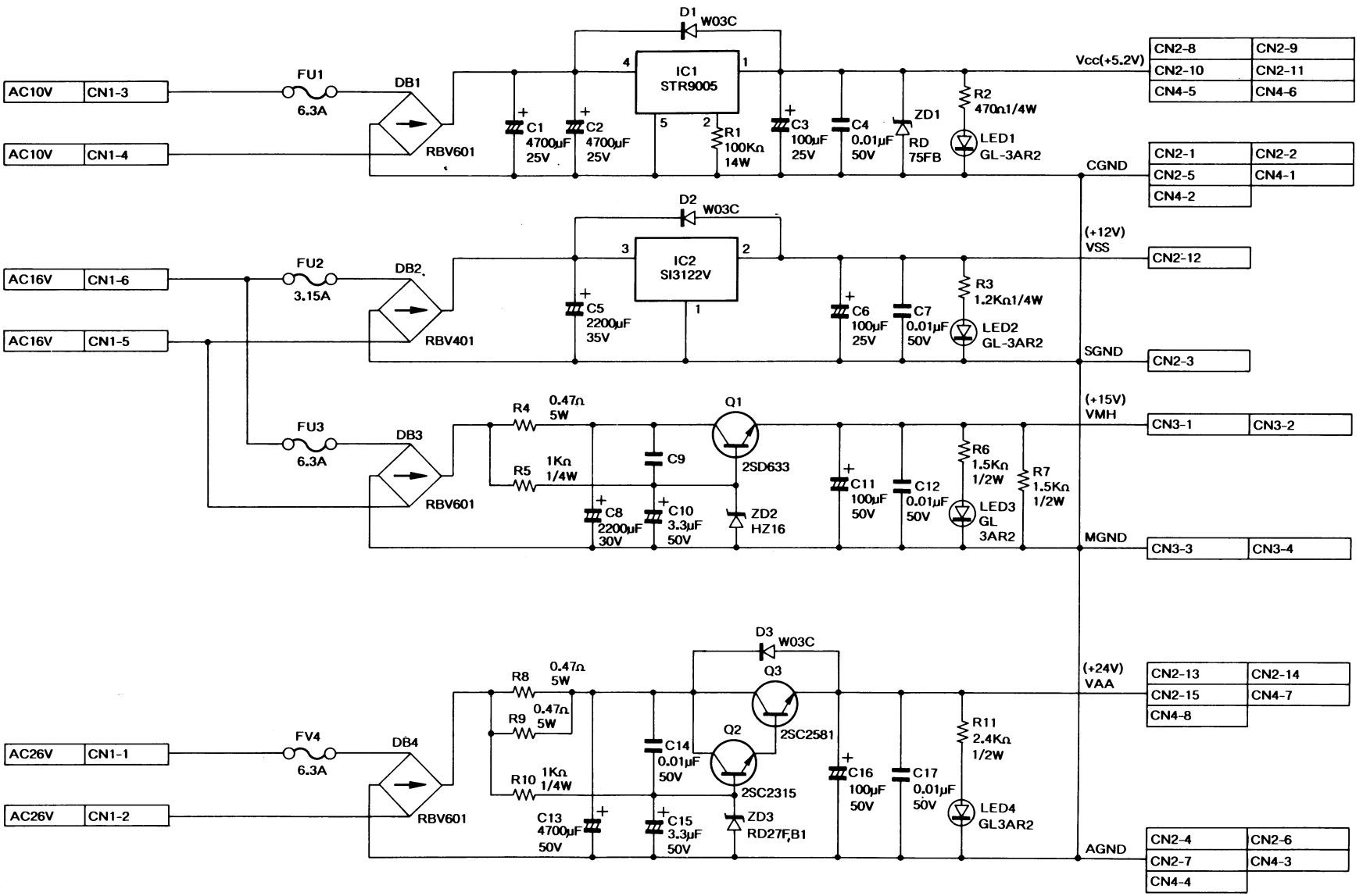
13. TIMING CHART (MAIN FRAME)

14. DF TIMING CHART

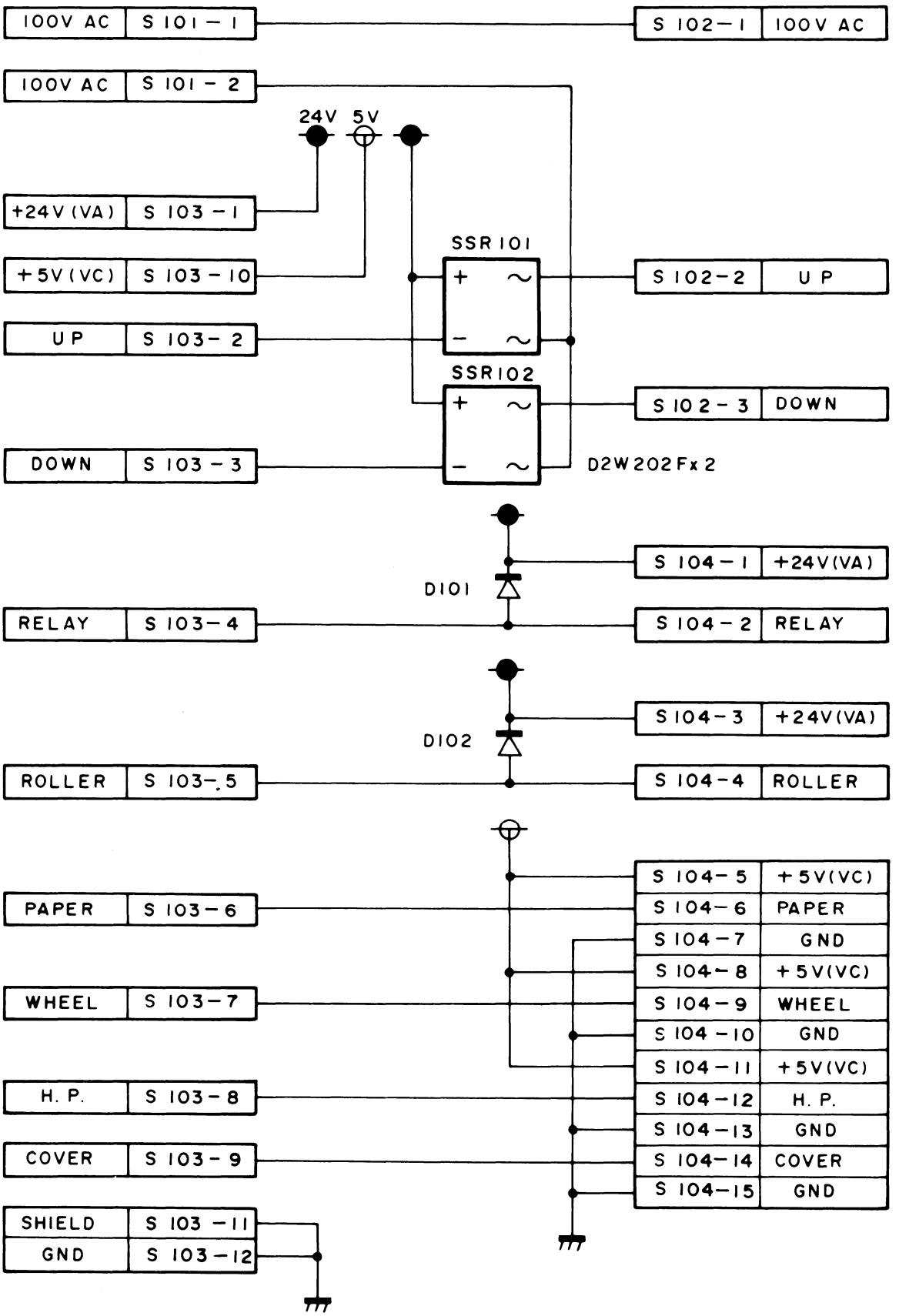
4. PAPER FEED CONTROL BOARD SCHEMATIC



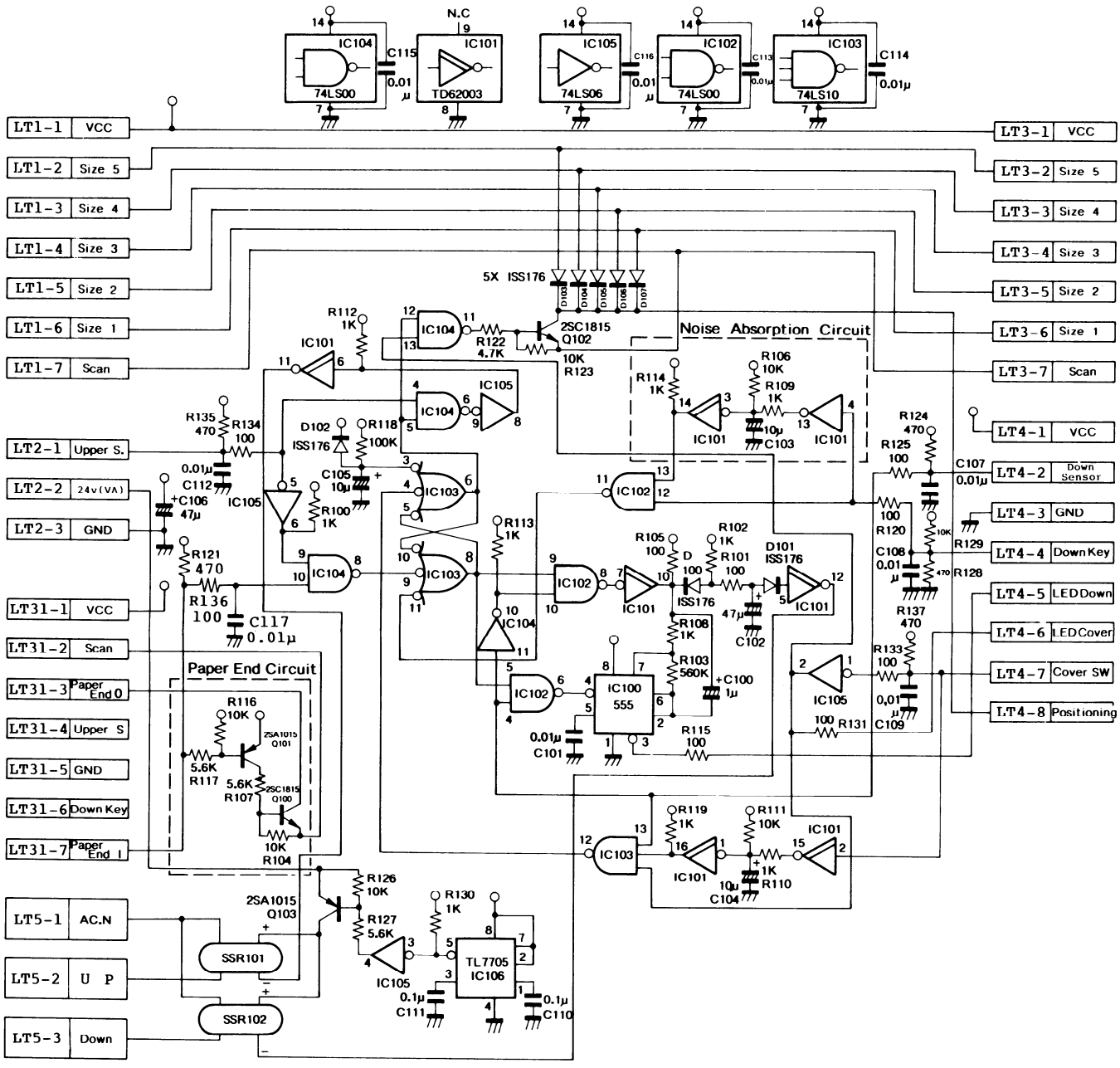
5. DC POWER SUPPLY BOARD SCHEMATIC



9. SORTER CONTROL BOARD SCHEMATIC



10. LCT CONTROL BOARD SCHEMATIC (Main Control)



SECTION 5

DOCUMENT FEEDER

CONTENTS

1. UNPACKING AND INSTALLATION

ACCESSORY CHECK	5- 1
INSTALLATION PROCEDURE	5- 2

2. REPLACEMENT AND ADJUSTMENT

DF BELT REPLACEMENT	5- 9
PICK-UP ROLLER REPLACEMENT	5-10
FEED ROLLER REPLACEMENT	5-12
FRICTION ROLLER REPLACEMENT	5-16
REGISTRATION ROLLER REPLACEMENT	5-19
STOPPER PLATE POSITION ADJUSTMENT	5-21
DF BELT DRIVE MOTOR SPEED ADJUSTMENT	5-22
LEAD EDGE REGISTRATION ADJUSTMENT	5-23

1. UNPACKING AND INSTALLATION

- ACCESSORY CHECK -

Check the quantity and condition of the accessories in the box according to the following list:

	DESCRIPTION	Q'TY
1.	Installation procedure (115V - English only. 220V/240V - five languages)	1
2.	New Equipment Condition Report	1
3.	NECR Envelope (115V only)	1
4.	Original exit guide	1
5.	Flip scale	1
6.	Flip scale spring	1
7.	Flathead shoulder screw	2
8.	Original feed table	1
9.	Original table cover	1
10.	DF interface harness	1
11.	Nylon harness bushing	1
12.	Test chart A4	1
13.	Flathead screw - M4 X 6	2
14.	Ground screw	2
15.	Toothed washer	2
16.	Pan head screw - M4 X 6	4
17.	Pan head screw with washer - M4 X 6	2
18.	Pan head screw - M5 X 12	4
19.	Flathead Screw - M4 X 8	2
20.	Multilingual decals (220/240V only)	1

Interface PCB type E is also required for DF installation.

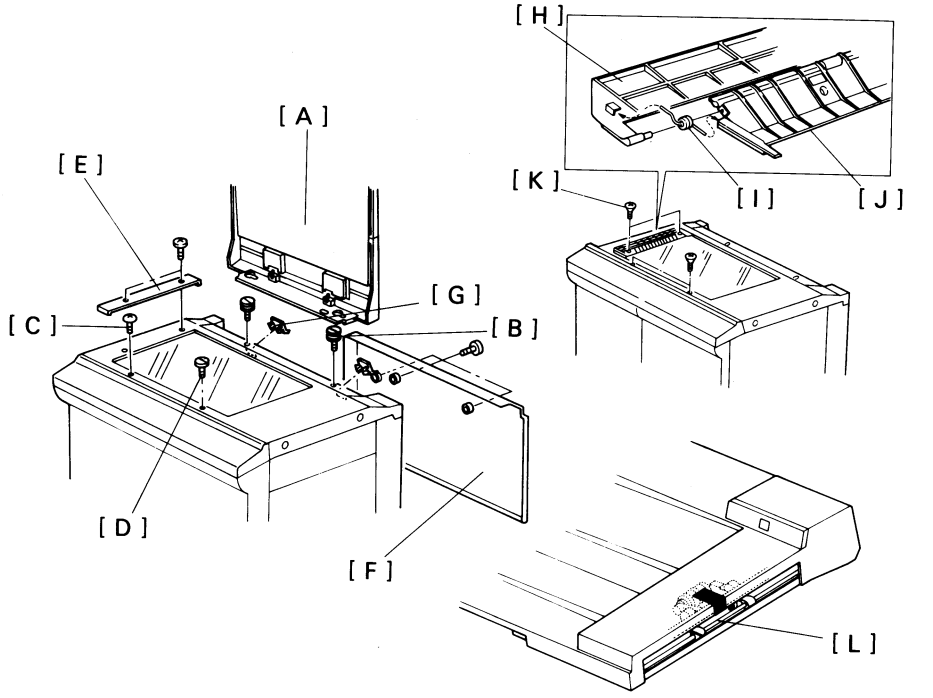
Check the accessories according to the following list:

Interface PCB Type E box:

	DESCRIPTION	Q'TY
1.	PCB Mounting Stud	2
2.	Bolt	2
3.	Nut	2

NOTE: The interface PCB type E is not necessary if a sorter is already installed in the machine.

- INSTALLATION PROCEDURE -



1. Turn off the main switch and unplug the power supply cord of the copier.

2. Remove the following parts:

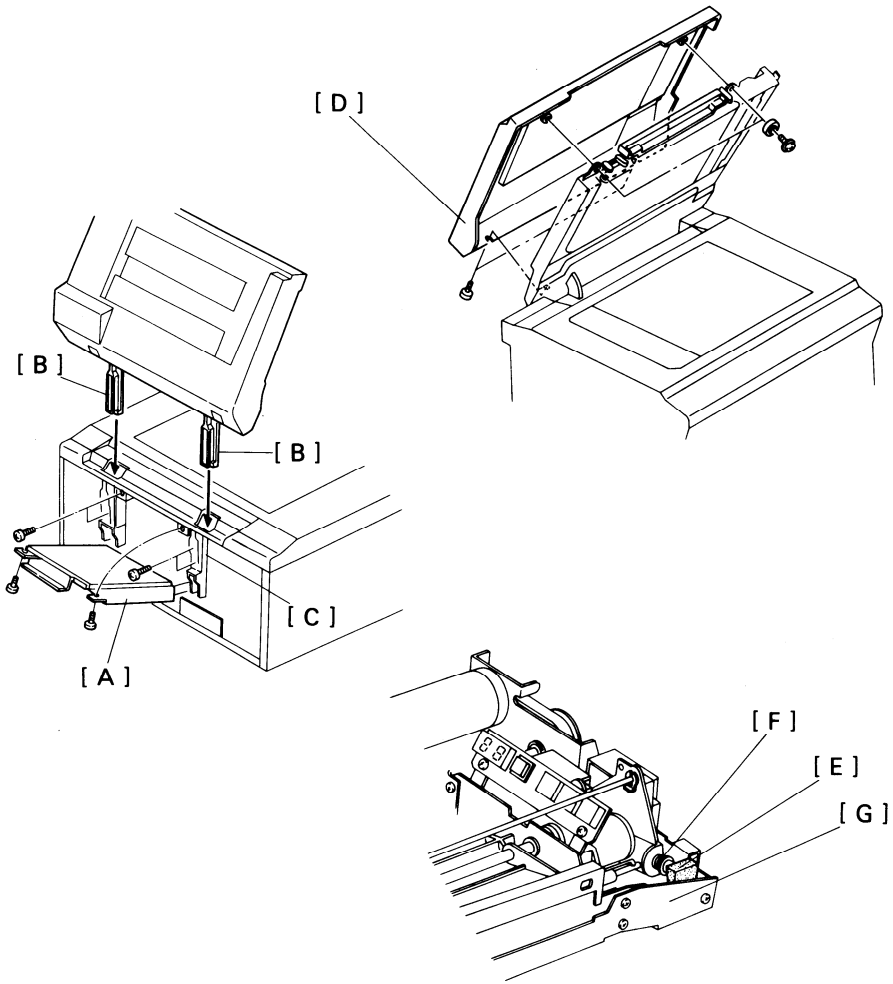
   1) Platen cover [A]
   2) Mounting stud (2 pcs) [B]
   3) Truss screw [C]
   4) Plastic screw [D]
   5) Left scale (2 screws) [E]
   6) Rear cover (3 screws) [F]
   7) ADF docking hole cap (2 pcs) [G]

   Save the above parts for future use.

3. Set the flip scale [H] (with the flip scale spring [I]) on the original exit guide [J]; then, mount it as shown (2 flathead screws).

4. Secure two flathead shoulder screws [K] as shown in the figure.

5. Remove the shipping tape [L].



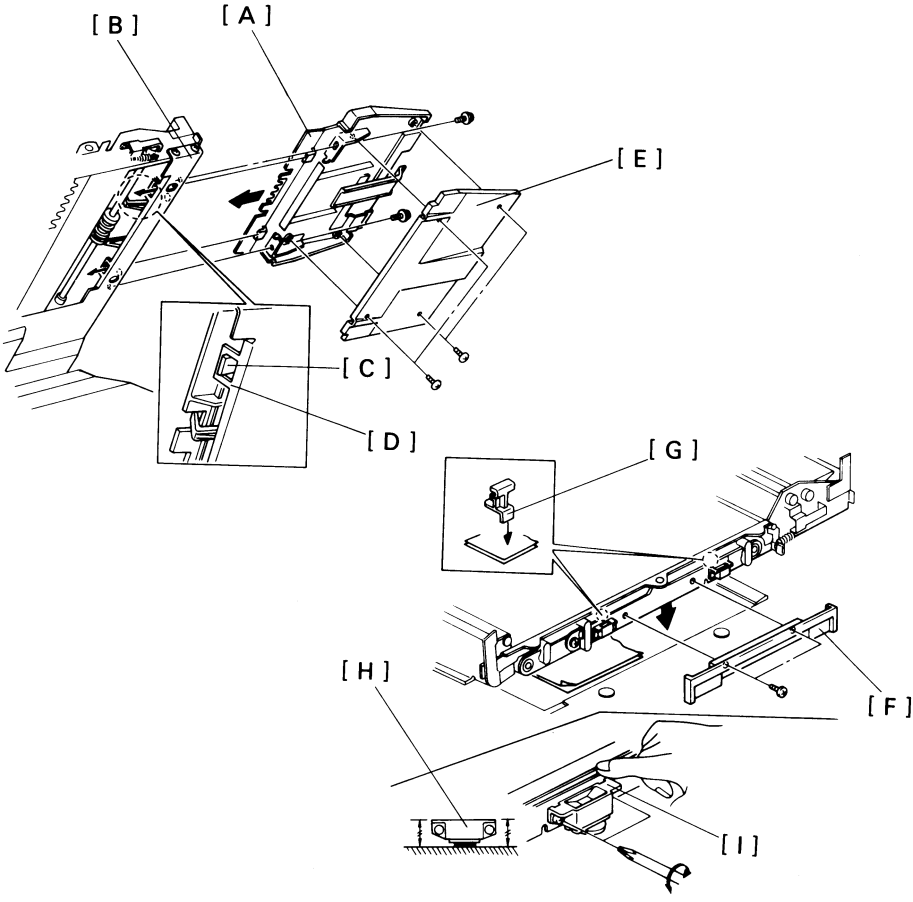
6. Lower the PCB plate [A] (2 screws).

7. Insert the mounting posts [B] into the DF mounting brackets [C].

8. Temporarily secure the mounting posts to the DF mounting brackets (4 screws, M5 X 12).

9. Remove the DF cover [D] (4 screws).

10. Remove the shipping cushion [E] between the stopper solenoid [F] and the DF side plate [G].

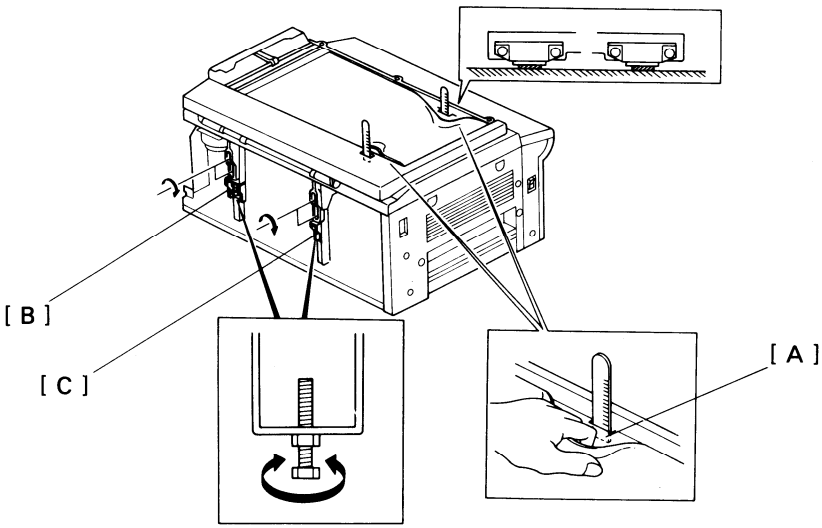


11. Install the original feed table [A] on the right side of the belt unit [B] (2 screws with washer). Be sure to engage the 2 hooks [C] of the original table with the docking holes [D] of the belt unit.

12. Install the original table cover [E] under the original table (4 screws).

13. Level the DF as follows:

    a) Remove the DF grip plate [F] (2 screws).
    b) Place 2 sheets of A3 (11" x 17") paper between the white belt guide spacers [G] and the exposure glass.
    c) Loosen the mounting screws of the right side magnetic catch [H]. Push down the right side of the magnetic catch bracket [I], then tighten the screws of the right magnetic catch. Repeat this process with the left side magnetic catch.
    d) Remove the 2 sheets of paper.

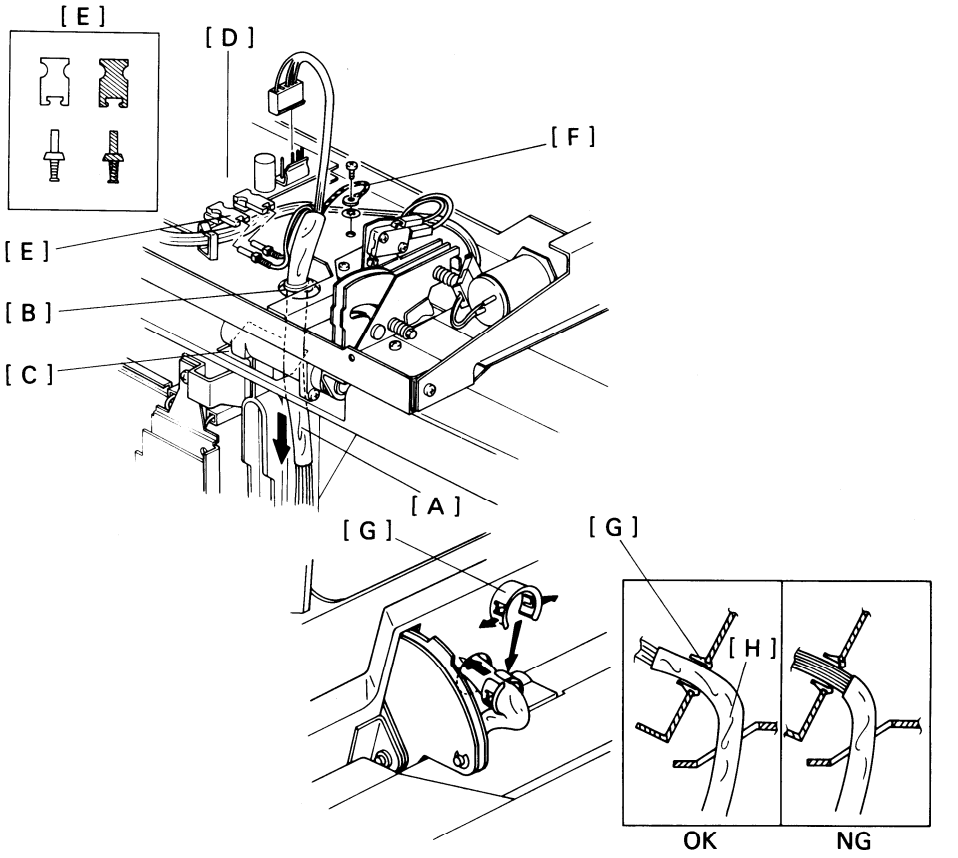


e) Adjust the height of rear side of the belt unit as follows:

1) Lift the upper part of the feed belt out of the way and measure the distance between the top of the access hole [A] in the pressure roller support bracket and the lower part of the feed belt at the front and rear left corners.
2) Adjust the two distances so that they are the same using the left height adjusting bolt [B] on the DF mounting bracket.
3) Adjust the right rear height adjusting bolt [C] so that the DF closes properly.
4) Make sure that the belt is properly positioned in the belt guide spacers.
5) Tighten the four screws (M5 x 12) on the mounting posts. Lock the height adjusting bolts [B], [C] (2 lock nuts).

f) Install the DF grip plate.

g) Check that the DF closes properly.



CAUTION: On the following step, avoid bending the fiber optics sharply; this will damage the fiber optics.

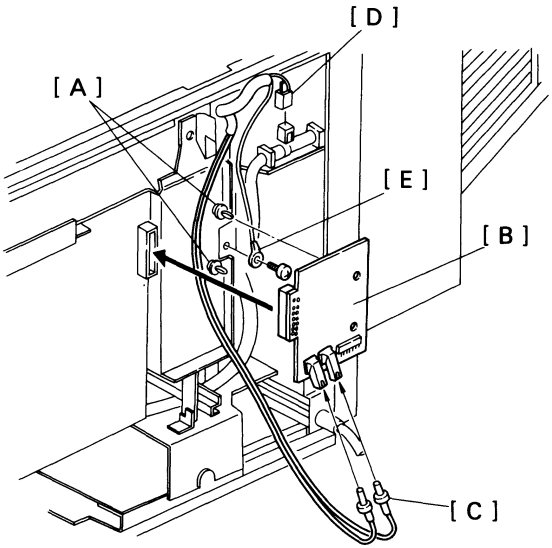
14. Pass the DF interface harness [A] through the harness hole [B] of the DF and the docking hole of the copier [C].

15. Connect the DF interface harness to the DF PCB [D] (3 connectors).

    NOTE: The fiber optics connectors [E] have different colors. Be sure to match these colors when making these connections.

16. Secure the DF ground wire [F] on the DF base plate (1 ground screw and toothed washer).

17. Open the DF and install the nylon harness bushing [G] from the underside. (This harness bushing should be positioned around the vinyl tube [H] of the DF harness as shown.)



18. Raise and secure the copier PCB plate (2 screws).

19. Fix the two PCB mounting studs [A] on the PCB plate and install the interface board [B]. (This is not necessary if a sorter is already installed in the machine.)

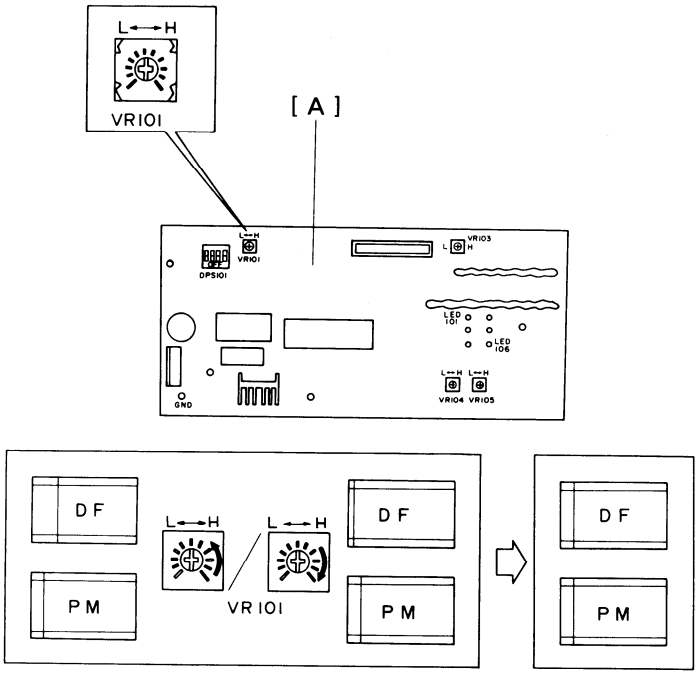
20. Connect the 3 connectors.

    a) Being careful not to damage the two fiber optic connectors [C], connect them to the interface board as follows:

       CN806 <== Brown ==> CN103
       CN807 <== Black ==> CN104

    b) Connect the DF harness connector [D] to the copier's ac 4p connector.

21. Secure the ground wire [E] to the DF right mounting bracket (1 ground screw and toothed washer).



22. Turn on DIP switch 101-2 [A] on the DF PCB.

23. Adjust the lead edge registration as follows:

    a) Turn on the copier main switch and make a copy using the test chart in the platen mode with the flip scale.

    b) Keep this copy for reference and mark “PM” (Platen Mode) on the reverse side of it.

    c) Make a copy using the test chart with the DF.

    d) Adjust the DF registration to match the “PM” reference copy using VR101 on the DF PCB [B].

       PM > DF: Turn VR101 clockwise
       PM < DF: Turn VR101 counterclockwise

    e) Continue to repeat steps c) and d) until you achieve the same registration as in step ‘b’.

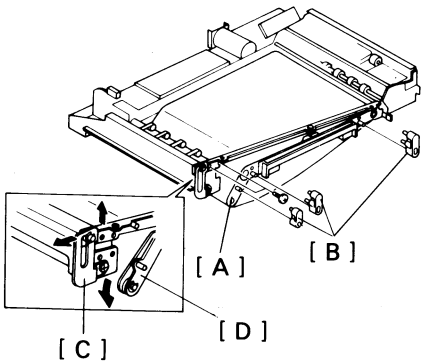
24. Replace all covers.

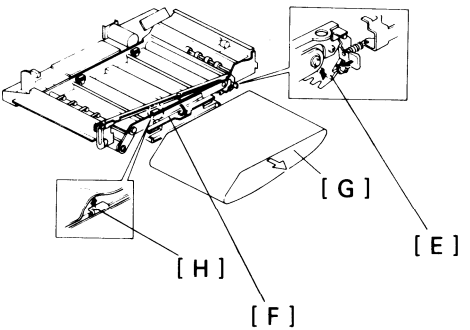
25. Check the operation of the DF and copier system.

26. Fill out the New Equipment Condition Report.

2. REPLACEMENT AND ADJUSTMENT

- DF BELT REPLACEMENT -



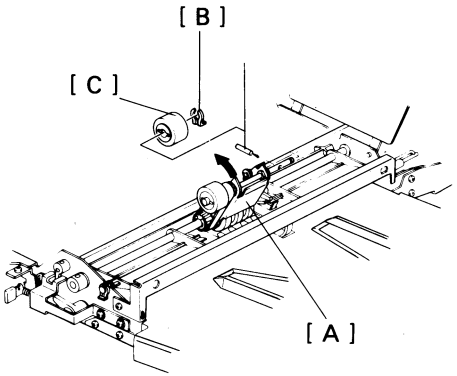


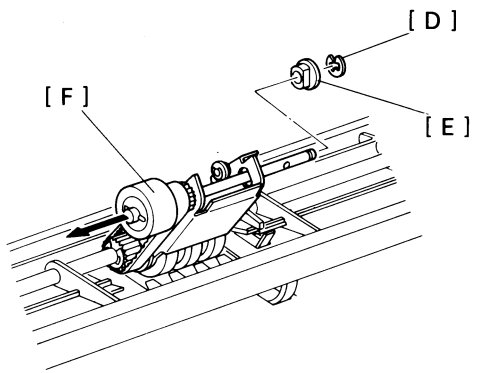
1. Remove the DF cover (4 screws, 2 collars).
2. Remove the 2 screws securing the left side of the front stay [A] and remove the 3 belt unit holders [B].
3. Raise the left end of the front stay and set it in the up position with the lock plate [C].
4. Rotate the belt release bracket [D] counterclockwise and lower the original entrance guide [E].
5. Lower the DF grip bracket [F] and release the belt [G] from the belt guide spacers [H].
6. Slide off the DF belt [G].

NOTE: - After installing the DF belt, make sure that the belt is properly positioned in the belt guide spacers.

- When returning the DF grip bracket to its original position, make sure that the DF grip bracket is properly set behind the flathead screw.

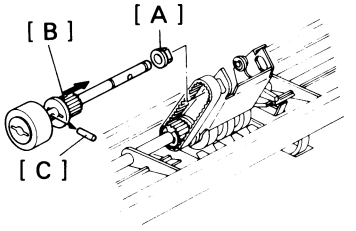
- PICK-UP ROLLER REPLAEMENT -

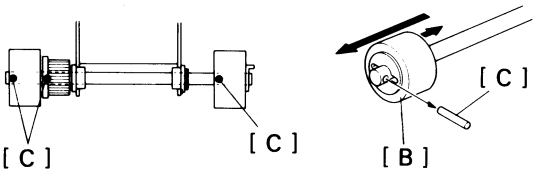




1. Remove the DF cover (4 screws, 2 collars).
2. Lift up the pick-up roller unit [A] and remove the snap ring [B].
3. Slide off the rear pick-up roller [C].

   NOTE: Be careful not to lose the pin.
4. Remove the E-ring [D] and bushing [E].
5. Slide off the front pick-up roller assembly [F].



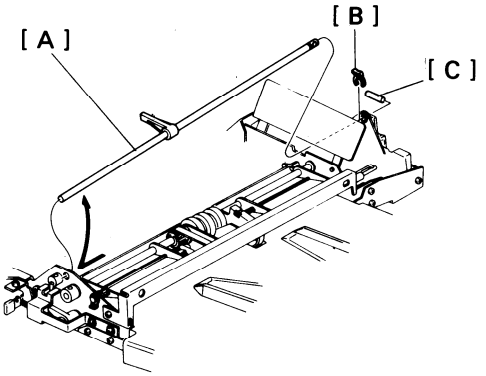


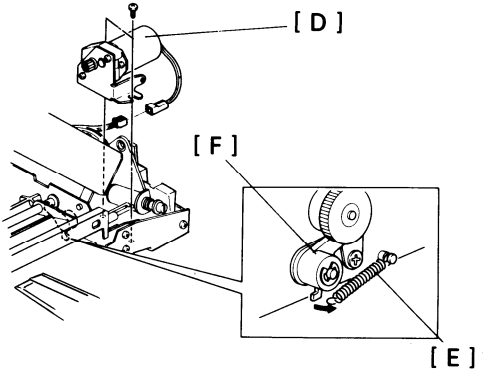
6. Slide off the pulley [A] and the pick-up roller [B].

NOTE: Be sure not to lose the drive pins [C] of the pulley and pick-up roller.

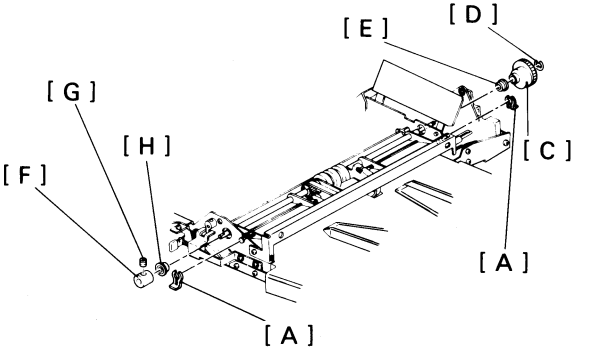
7. Replace the pick-up rollers and reassemble.

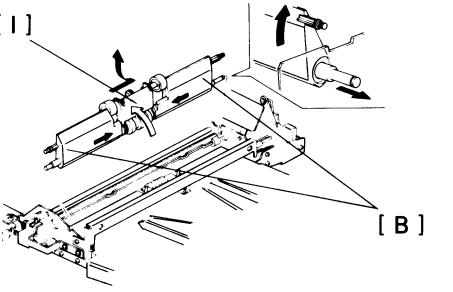
- FEED ROLLER REPLACEMENT -





1. Remove the DF cover (4 screws, 2 collars).
2. Remove the pick-up control shaft [A] (1 snap ring [B], 1 pin [C]).
3. Remove the feed-in motor [D] (2 screws).
4. Unhook the spring [E] of the wear prevention lever [F].





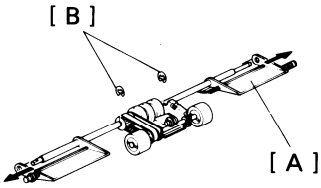
5. Remove the two snap rings [A] fixing the feed-in guides [B].

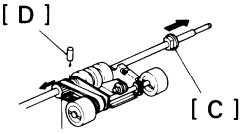
6. Remove the feed roller drive gear [C] (1 E-ring [D], 1 bearing [E]).

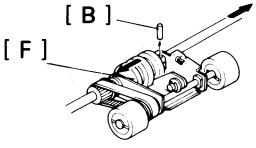
7. Remove the collar [F] (1 allen screw [G]) and the bearing on the front feed roller shaft [H].

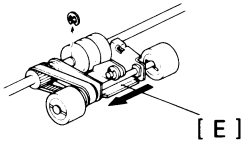
8. Stand the feed roller unit [I] and slide the feed-in guides as shown in the figure.

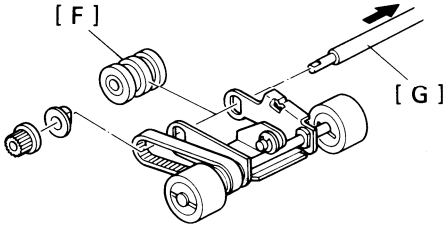
9. Then slide the unit to the rear, lift the front of the unit, and remove it from the DF.



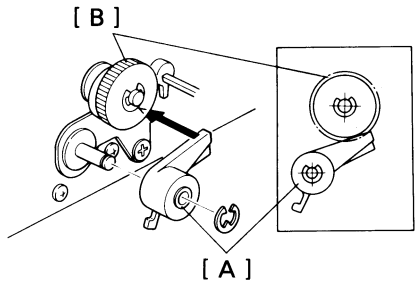


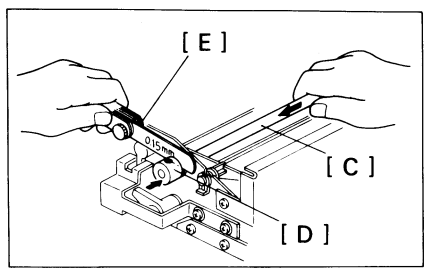






10. Slide off the feed-in guides [A] and remove two E-rings [B].
11. Remove the bushing [C] and slide the pulley towards the front to remove the pulley pin [D].
12. Slide the pick-up roller unit [E] to the front and remove the E-ring.
13. Slide the feed roller [F] to the front and remove the pin.
14. Slide off the feed roller shaft [G].
15. Replace the feed roller and reassemble.



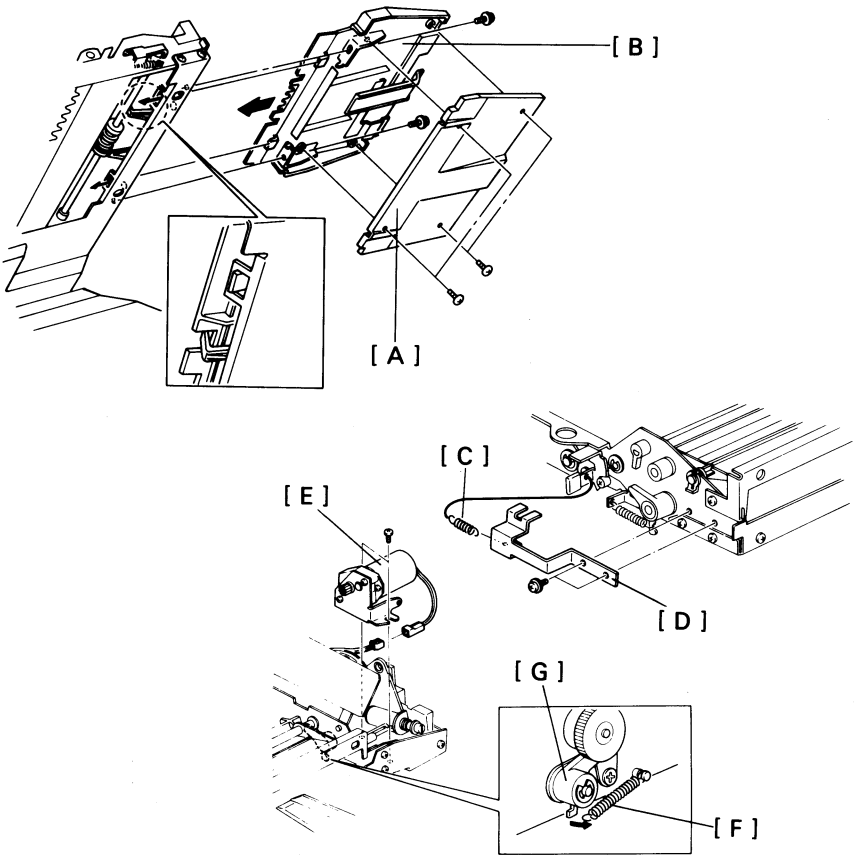


16. When reassembling the feed roller unit, make sure of the following points:

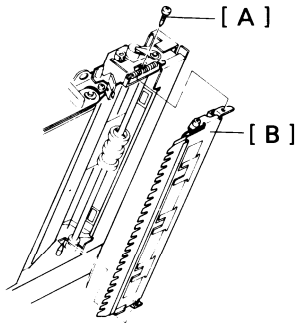
    1) Confirm that the wear prevention lever [A] is to the right of the drive gear [B] as viewed from the rear.

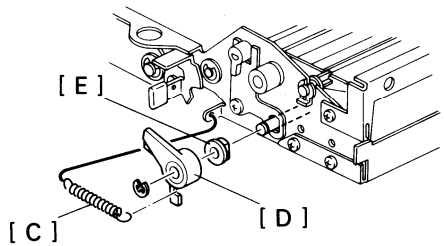
    2) Tighten the Allen screw of the feed roller shaft [C] collar [D] so that the clearance between the bushing and collar is 0.15 mm (check with a thickness gauge [E]).

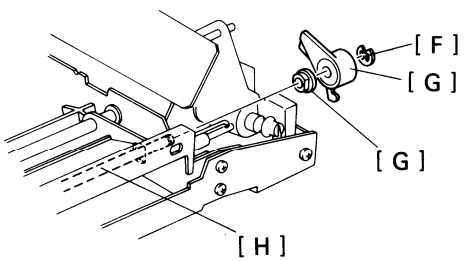
- FRICTION ROLLER REPLACEMENT -



1. Remove the DF cover (4 screws, 2 collars).
2. Remove the original table cover [A] (4 screws).
3. Remove the original table [B] (2 screws).
4. Remove the lever spring [C] and the stopper plate [D] (2 screws).
5. Remove the feed-in motor [E] (2 screws, 1 connector).
6. Unhook the spring [F] of the wear prevention lever [G].



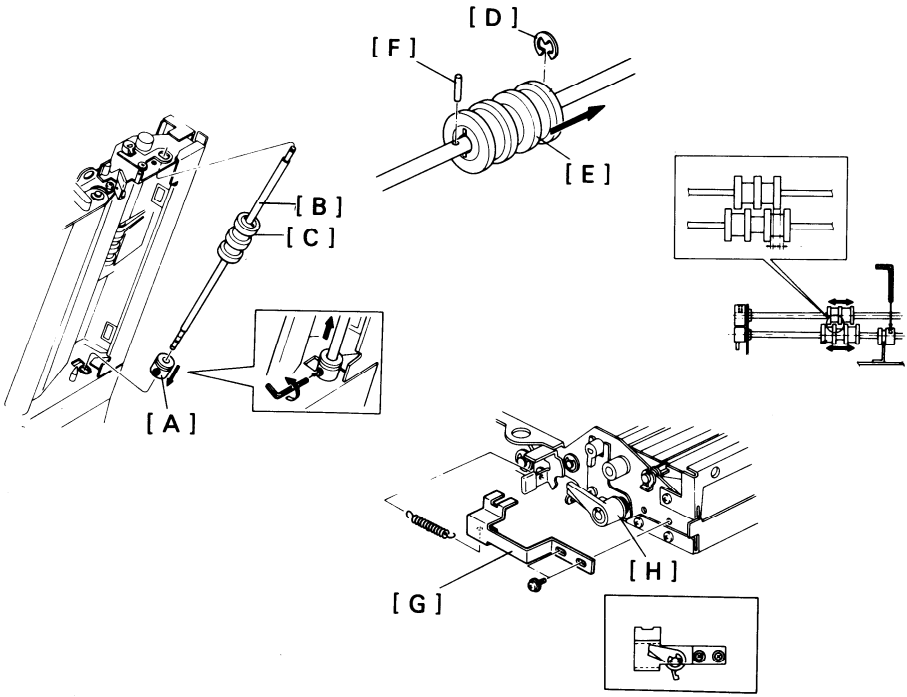




7. Remove the front stud screw [A] and take out the original entrance guide [B].

8. Unhook the spring [C] of the misfeed prevention lever [D] and remove the misfeed prevention lever and the bushing [E] (1 E-ring [F]).

9. Remove the wear prevention lever [G] (1 E-ring) and the bushings on the friction roller shaft [H].



10. Loosen the allen screw in the collar [A] on the friction roller shaft [B] and remove the friction roller assembly [C].

11. Remove the E-ring [D] and replace the friction roller [E].

NOTE: - Be sure not to lose the pin [F].

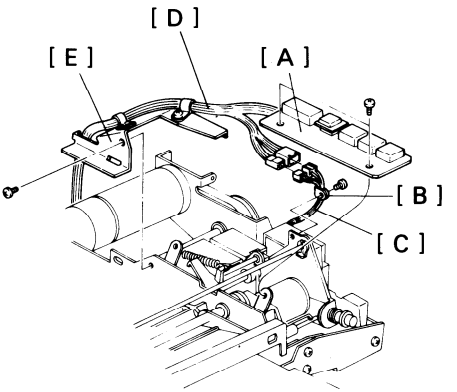
- **When reassembling the unit, make sure of the following points:**

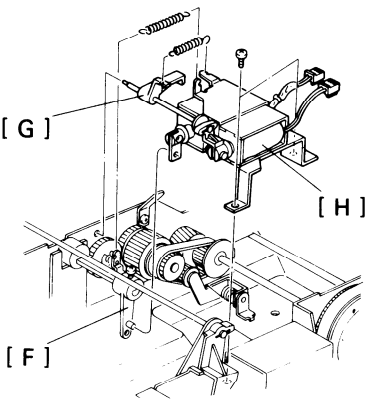
- **When replacing the collar on the friction roller shaft, position the friction roller so that it is centered on the feed roller.**

- **When replacing the stopper plate [G], make sure that the misfeed prevention lever [H] is restrained by the stopper plate as shown.**

- **Confirm the mounting position of the stopper plate (See "Stopper Plate Positioning").**

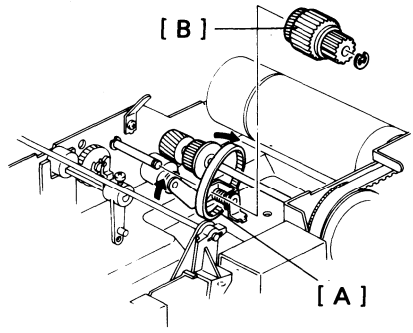
- REGISTRATION ROLLER REPLACEMENT -

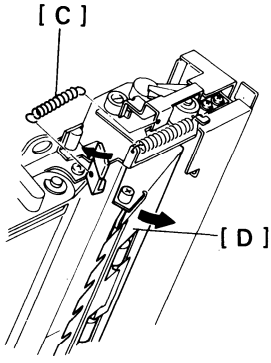


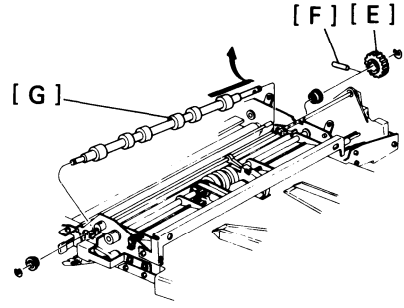


1. Remove the DF cover (4 screws, 2 collars).
2. Remove the indicator board [A] (2 screws).
3. Remove the harness clamp [B] as shown (1 screw).
4. Disconnect the registration solenoid harness [C] and roller release solenoid harness [D] (2 red connectors).
5. Move the indicator board and the harness bracket [E] (1 screw) away from the feed-in section.
6. Remove the springs of the friction roller release lever [F] and the registration clutch lever [G].
7. Remove the solenoid assembly [H] (2 screws).

NOTE: The release solenoid plunger is engaged with the release lever [I].







8. Slip off the timing belt [A] while lifting the belt tightener.

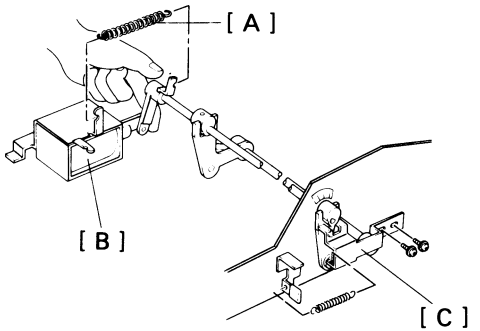
9. Remove the registration clutch assembly [B] (1 E-ring).

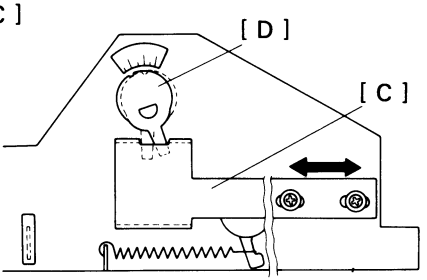
10. At the front, remove the lever spring [C] and lower the original entrance guide [D].

11. Remove the registration drive gear [E] (1 E-ring, 1 pin [F]).
NOTE: Do not lose the pin.

12. Remove the registration roller [G] as shown in the figure (1 E-ring, 2 bearings).

- STOPPER PLATE POSITION ADJUSTMENT -





Reinstall the stopper plate as follows:

1. Remove the spring [A] of the friction roller release solenoid [B] and keep the solenoid plunger inside the coil.

2. Loosen the two screws of the stopper plate [C].

3. Position the plate so that the groove of the cam [D] aligns with the "4" calibration mark.

   NOTE: - This means that the overlap of the feed and friction rollers is adjusted to 0.4 mm when the friction roller is released from the feed roller.

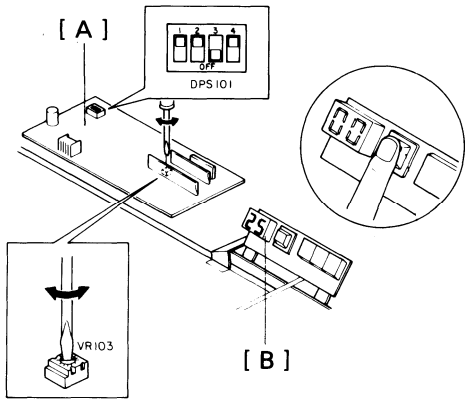
   - **If the cam cannot align with the "4" mark, reposition the roller release solenoid by loosening the solenoid mounting screws.**

4. Replace the spring of the solenoid.

   NOTE: - If multiple feeding occurs, increase the overlap by repositioning the stopper plate.

   - **If the original becomes smeared, decrease the overlap.**

- DF BELT DRIVE MOTOR SPEED ADJUSTMENT -



This adjustment should be done when the DF PCB [A] is replaced.

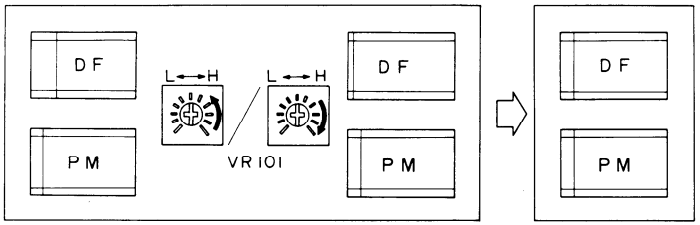
ADJUSTMENT STANDARD : 2500 ± 30 rpm

1. Turn off the main switch.
2. Remove the DF cover (4 screws, 2 collars)
3. Lower the DF unit.
4. Turn on DIP SW 101-2 and 101-4 of the DF main board.
5. Turn on the main switch.

   The belt drive motor will start turning, and the left two digits of the motor speed will be displayed in the original counter. To display the second two digits of the motor speed, press the Counter Reset key

   For example, if motor speed is 2500 rpm, “00” will be displayed on the original counter [B] when the Counter Reset key is pressed; “25” will be displayed when it is not pressed.
6. Adjust the motor speed to 2500 ± 30 rpm by turning VR103 on the DF main board.
7. Turn off the main switch, turn off DIP SW 101-2 and 101-4 to the normal position (DIP SW 101-1 is on and all others are off), and reassemble.

- LEAD EDGE REGISTRATION ADJUSTMENT -



1. Adjust the lead edge registration as follows:

   a) Turn on the copier main switch and make a copy using the test chart in the platen mode with the flip scale.

   b) Keep this copy for reference and mark “PM” (Platen Mode) on the reverse side of it.

   c) Make a copy using the test chart with DF.

   d) Adjust the DF registration to match the “PM” reference copy using VR101 on the DF PCB [B].

      PM > DF: Turn VR101 clockwise
      PM < DF: Turn VR101 counterclockwise

   e) Continue to repeat steps c) and d) until you achieve the same registration as in step b).

2. Replace all covers.

3. Check the operation of the DF and copier system.

4. Fill out the New Equipment Condition Report.

SECTION 6

SORTER

CONTENTS

1. UNPACKING AND INSTALLATION

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INSTALLATION PROCEDURE	6- 2

2. REPLACEMENT AND ADJUSTMENT

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PAPER SENSOR REPLACEMENT	6- 7
TIMING BELT TENSION ADJUSTMENT	6- 8

1. UNPACKING AND INSTALLATION

- ACCESSORY CHECK -

Check the quantity and condition of the accessories in the box according to the following list:

	DESCRIPTION	Q'TY
1.	Installation Procedure (115V - English only. 220V/240V - five languages)	1
2.	New Equipment Condition Report	1
3.	NECR Envelope (115V only)	1
4.	Grounding Screw	1
5.	Toothed Washer	1
6.	Knob Screw	2
7.	Spacer (4.2 x 12 x 2.9)	2
8.	Multilingual Decal (220/240V only)	2

Interface PCB Type E and Sorter Adapter Type E are also required to install the sorter.

Check the accessories according to the following list:

Sorter Adapter Type E box:

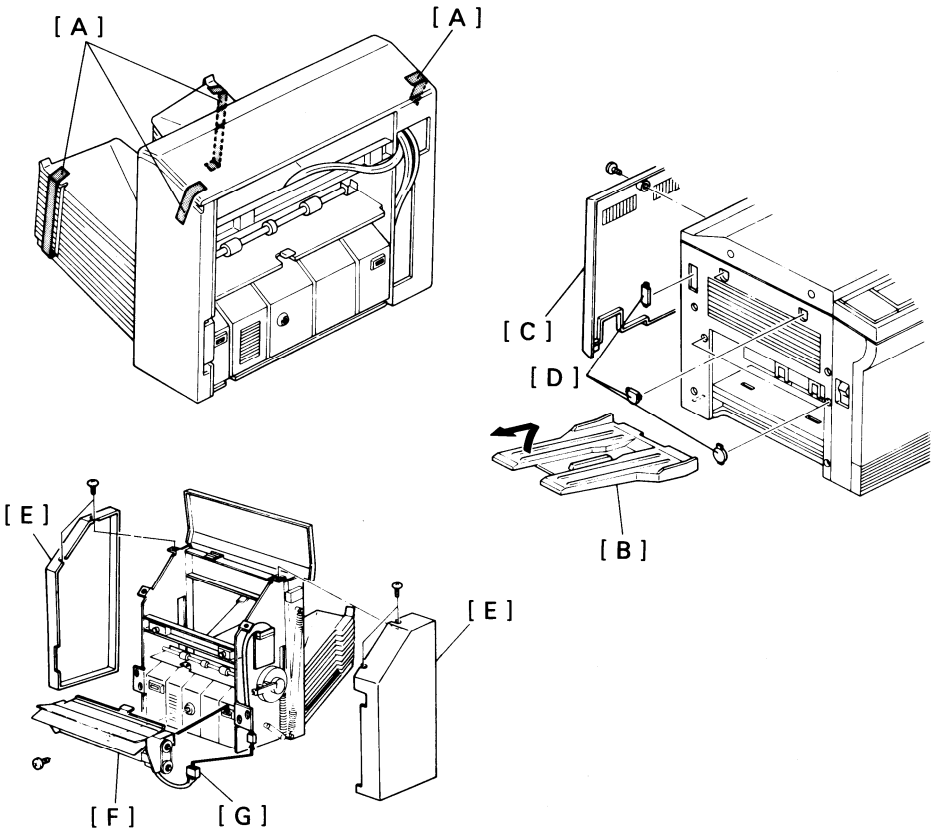
	DESCRIPTION	Q'TY
1.	Mounting Stud	2
2.	Screw	1

Interface PCB Type E box:

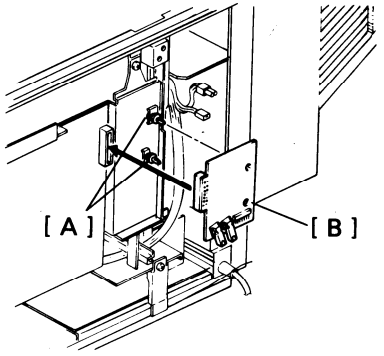
	DESCRIPTION	Q'TY
1.	PCB Mounting Stud	2
2.	Bolt	2
3.	Nut	2

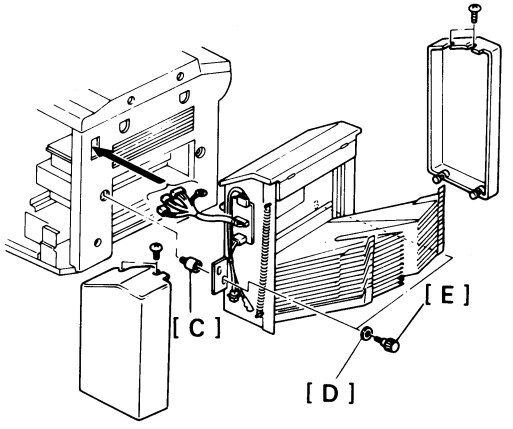
NOTE:
- **Save the bolts and nuts for ADF installation.**
- **Interface PCB is not necessary if a DF is already installed in the system.**
- **Key-top and Key Cover for the sorter installation are attached the back-side of the rear cover.**

- INSTALLATION PROCEDURE -



1. Remove the strips [A] of tape shown in the figure.
2. Turn off the main switch and unplug the power supply cord of the copier.
3. Remove the receiving tray [B] and rear cover [C] of the copier (2 screws).
4. Remove the five plastic caps [D] from the left cover.
5. Remove the sorter covers [E] (2 screws each).
6. Install the sorter adapter [F] on the sorter (1 screw).
7. Connect the sorter adapter harness [G] to the sorter (free white 2p connector).



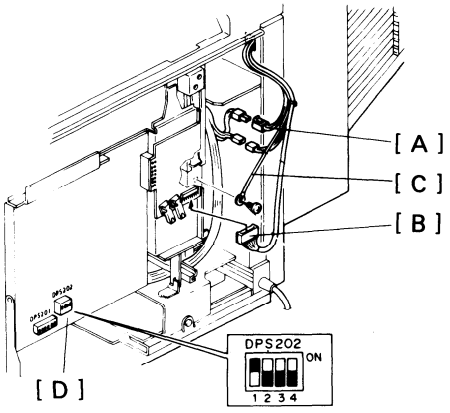


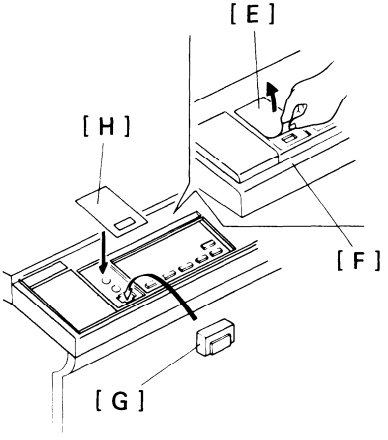
8. Fix the two PCB mounting studs [A] on the main board and install the interface board [B]. (The mounting studs are packed with the interface board.)

9. Screw in the lower mounting studs [C].

10. Mount the sorter on the copier. Insert the two mounting studs into the docking holes, and pass the harness through the access hole.

11. Fix the sorter unit to the copier with the spacers [D] and two knob screws [E].

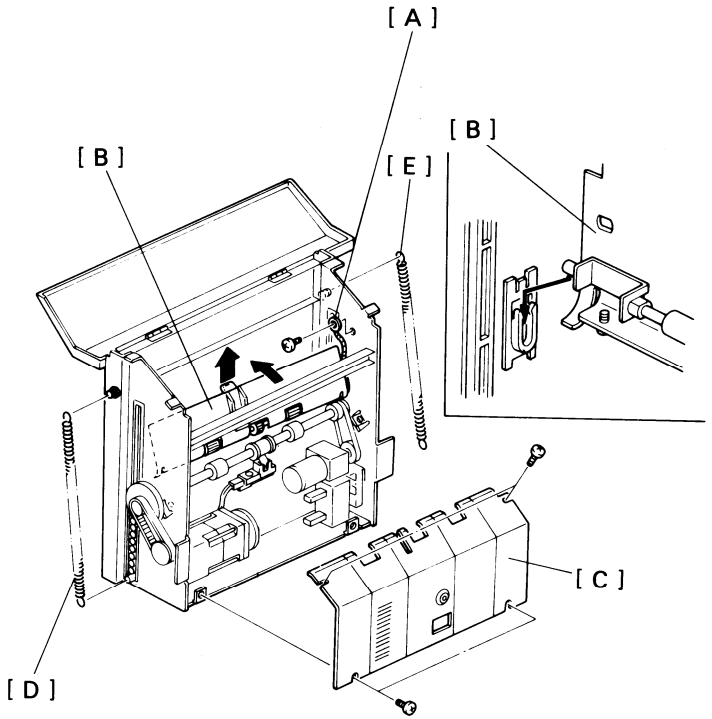




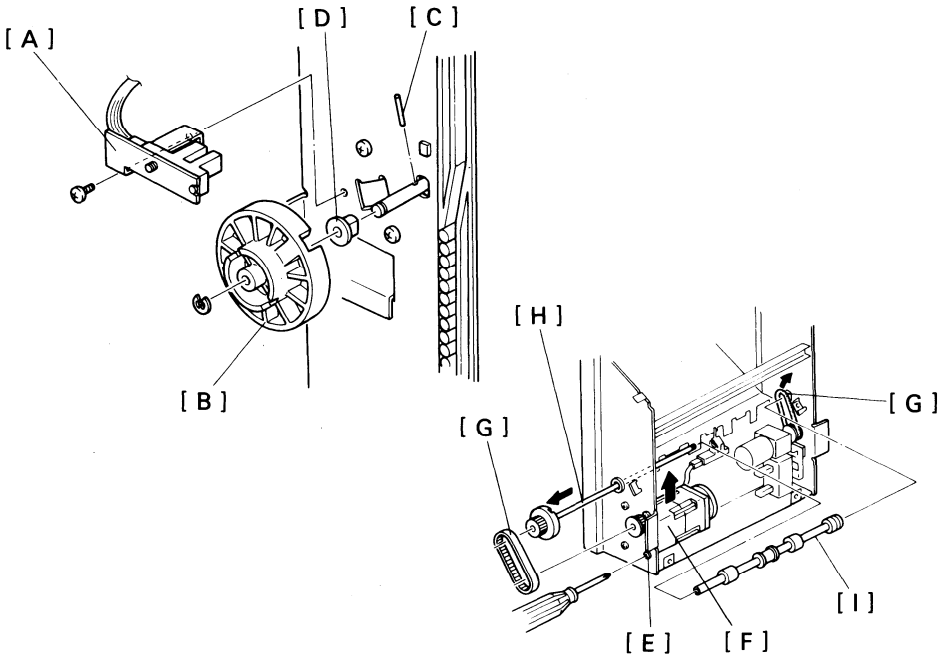
12. Connect the sorter ac harness [A] (free red 2p connector).
13. Connect the sorter dc harness [B] (CN102, free white 4p connector).
14. Secure the sorter ground wire [C] (1 screw with toothed washer).
15. Turn on DIP SW202-1 on the main board [D].
16. Mount the sorter covers and copier rear cover.
17. Peel off the panel cover [E] at the left end of the operation panel [F].
18. Set the Sort/Stack key top [G] and adhere the Sort/Stack key cover [H].
19. Check the sorter's operation and fill out the New Equipment Condition Report.

2. REPLACEMENT AND ADJUSTMENT

- EXIT ROLLER AND O-RING REPLACEMENT -



1. Remove the sorter from the copier and the sorter adapter from the sorter.
2. Remove the front and rear covers (2 screws each).
3. Remove the ground wire [A] of the upper guide plate [B] (1 screw).
4. Swing the guide plate up, then remove it by carefully pulling it up.
5. Remove the inner cover [C] (4 screws).
6. Unhook the front [D] and rear [E] pressure springs.



7. Remove the wheel sensor assembly [A] (1 screw).

8. Remove the rear transfer wheel [B] (1 E-ring).

NOTE: Be sure not to lose the pin [C] of the wheel.

9. Remove the pin and bushing [D].

10. Loosen the four mounting screws [E] of the wheel drive motor [F].

11. Lift the wheel drive motor and slip off the timing belt [G].

12. Slide off the wheel drive shaft [H] and remove the exit roller [I] and O-ring [J].

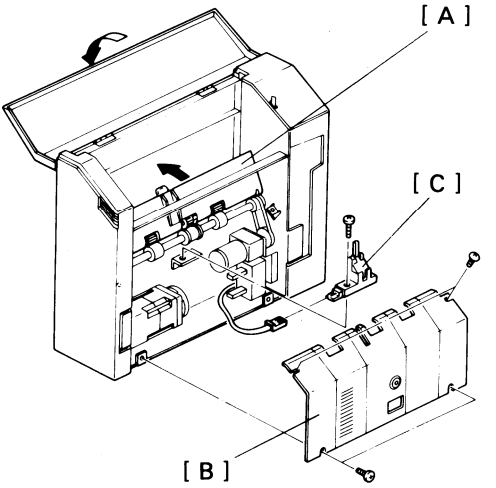
CAUTION: Do not damage the paper sensor [K] when removing the exit roller.

13. Replace the exit roller and O-ring, then reassemble.

NOTE: - When reinstalling the wheel sensor assembly, be sure that the sensor does not touch the wheel.

- When remounting the wheel drive motor, adjust the timing belt tension. (See the section on Timing Belt Tension Adjustment.)

- PAPER SENSOR REPLACEMENT -

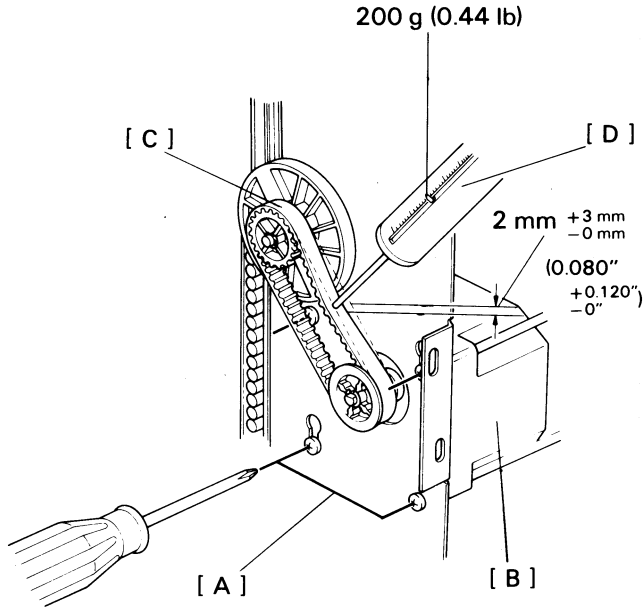


1. Remove the sorter from the copier and the sorter adapter from the sorter.
2. Swing up the guide plate [A].
3. Remove the inner cover [B] (4 screw).
4. Replace the paper sensor [C] (1 screw and 1 connector) and reassemble.

CAUTION: To avoid damaging the sensor, do not over-tighten the sensor mounting screw.

- TIMING BELT TENSION ADJUSTMENT -

ADJUSTMENT STANDARD: **2 $^{+3}_{-0}$ mm; 0.08 $^{+0.12}_{-0}$ inches**
(deflection at 200 g (0.44 lb) pressure)



1. Remove the front cover.
2. Loosen the four mounting screws [A] of the wheel drive motor [B].
3. Press the timing belt [C] with a tension gauge [D] as shown in the figure and adjust the tension by repositioning the wheel drive motor.

SECTION 7

LARGE CAPACITY TRAY

CONTENTS

1. UNPACKING AND INSTALLATION

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INSTALLATION PROCEDURE 7- 2

2. REPLACEMENT AND ADJUSTMENT

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TRAY DOWN SENSOR AND POSITIONING SWITCH REPLACEMENT 7- 9
PAPER SIZE SENSOR REPLACEMENT 7-11
SIDE REGISTRATION ADJUSTMENT 7-12

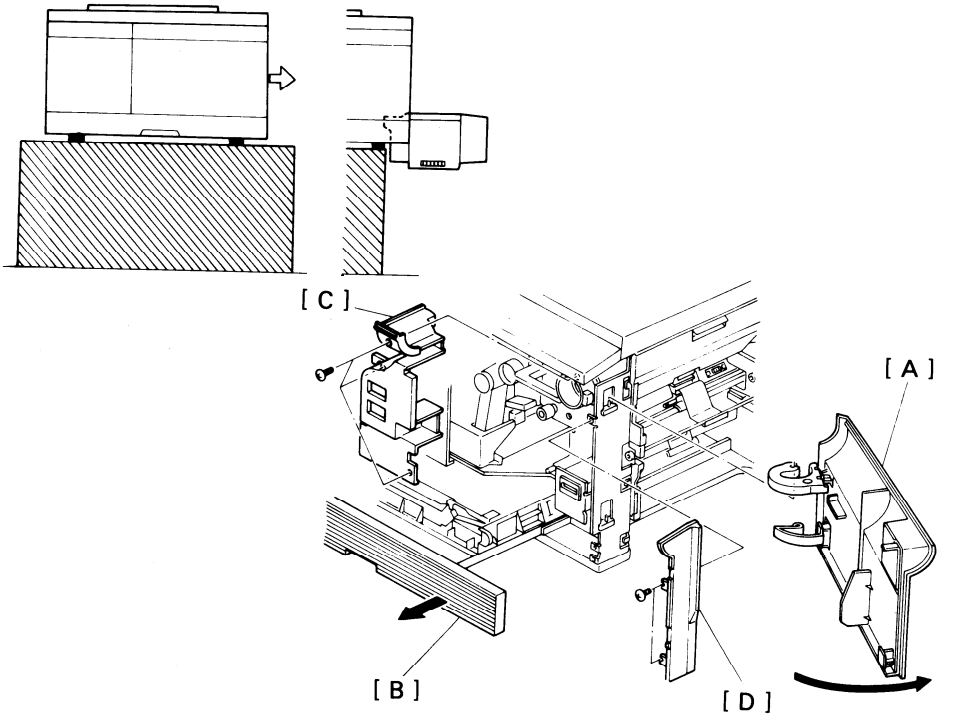
1. UNPACKING AND INSTALLATION

- ACCESSORY CHECK -

Check the quantity and condition of the accessories in the box according to the following list:

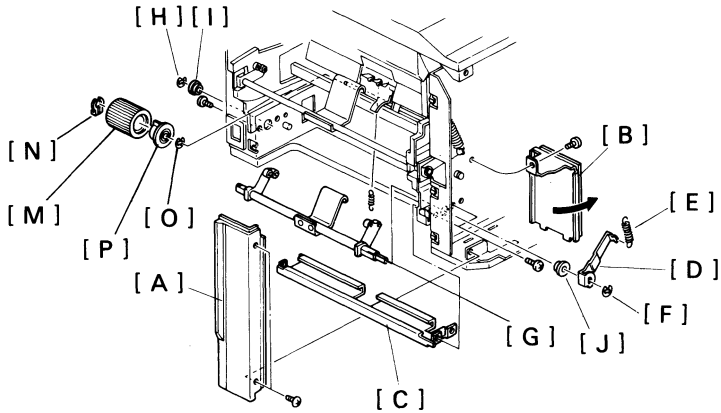
	DESCRIPTION	Q'TY
1.	Installation procedure (115V - English only. 220V/240V - five languages)	1
2.	New Equipment Condition Report	1
3.	Envelope - NECR (115V only)	1
4.	Pick-up roller assembly	1
5.	Feed Gear	1
6.	Mounting Bracket (Type A, B, C)	6
7.	Screw (M4 X 6)	4
8.	Screw (M4 X 8)	1
9.	Screw (M4 X 10)	2
10.	Clamper	1
11.	Caution decal (115V - English only. 220V/240V - five languages)	1
12.	Multilingual decals (220/240V only)	1

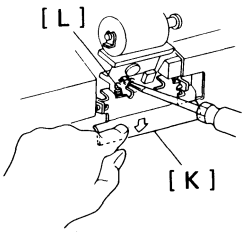
- INSTALLATION PROCEDURE -



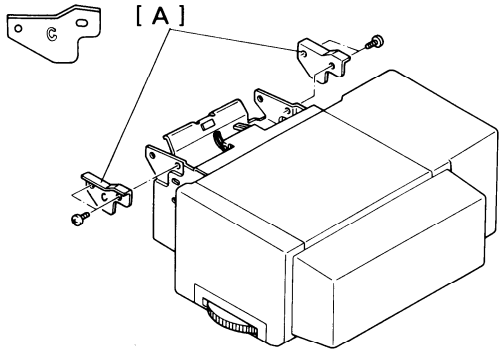
1. Turn off the main switch and unplug the power supply cord of the copier.
2. Move the copier to the right.

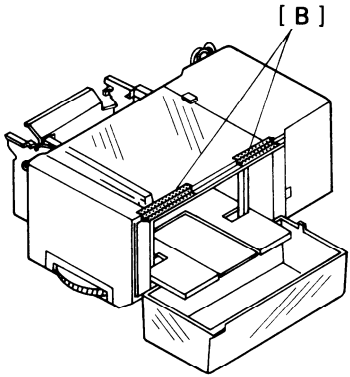
   NOTE: As this system does not contain a special system table, the copier must be moved to the right so that the large capacity tray can overhang the end of the table.
3. Open the right front door [A].
4. Pull out the cassette tray [B].
5. Remove the right inner cover [C] (3 screws with flat washer).
6. Remove the right front door [A].
7. Remove the front right side cover [D] (2 screws).

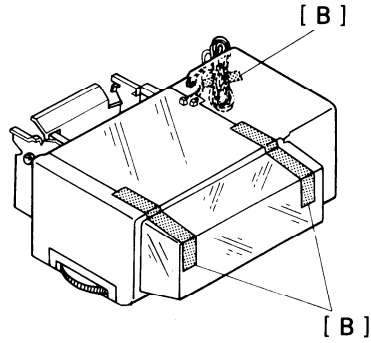




8. Remove the rear cover (2 screws).
9. Remove the rear right side cover [A] (2 screws).
10. Remove the paper feed PCB [B] (1 screw).
11. Remove the feed stay [C] (3 screws).
12. Remove the cassette arm lever [D] (1 spring [E], 1 E-ring [F]).
13. Remove the cassette arm assembly [G] (front - 1 E-ring [H] and 1 bushing [I], rear - 1 bushing [J]).
14. Press the pad positioning plate [K] down and unhook the spring [L] using a small screw driver.
15. Slide off the feed roller [M] (1 snap ring [N]).
16. Remove the nylon hub [O] from the feed roller.
17. Remove the E-ring [P] of the feed roller shaft.

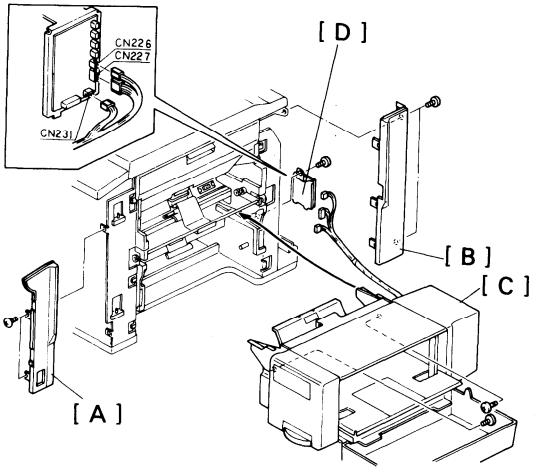






18. Install the mounting bracket [A] (Type C, Chrome) on the Large Capacity Tray (2 M4 X 6 screws each).

19. Remove the 5 strips of shipping tape [B].



20. Reinstall the front right side cover [A] and rear right side cover [B].

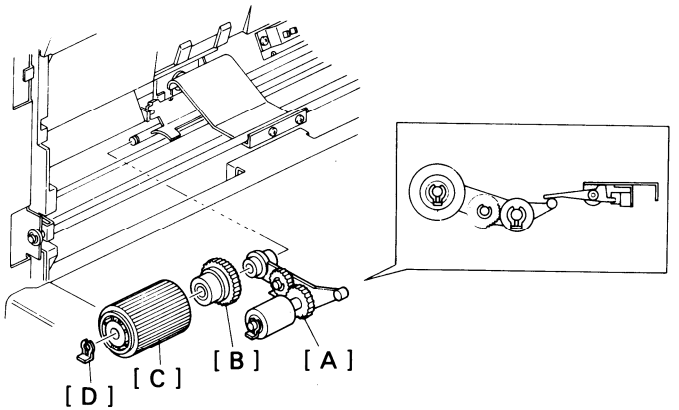
21. Place the large capacity tray [C] in the cassette holder on the 2nd feed station.

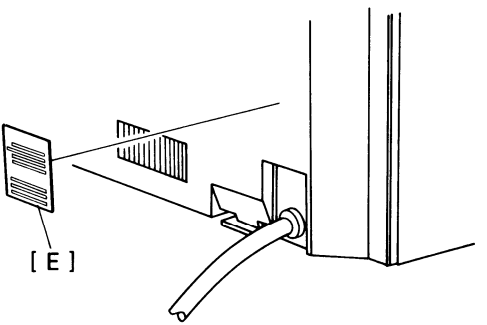
NOTE: Make sure that the rib of the tray side plate fits into the groove of the cassette holder.

22. Open the side and top covers and secure the tray to the 2nd feed station (2 screws, M4 X 10).

23. Disconnect CN226 and CN227, and fix these connectors with the harness clamp.

24. Connect the tray harness to the paper feed PCB [D] as follows:
    * 3p connector to CN226
    * 4p connector to CN231
    * 7p connector to CN227

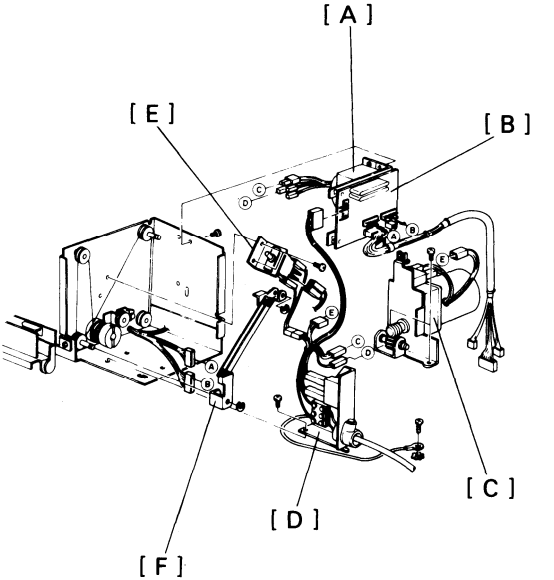




25. Install the pick-up roller assembly [A] on the feed roller shaft.
26. Install the gear [B] on the feed roller shaft.
27. Reinstall the feed roller [C] (1 snap ring [D]).
28. Make sure that the paper position feeler [F] is positioned as shown.
29. Reinstall all covers.
30. Stick the caution decal [E] on the copier rear cover.
31. Check the operation of the Large Capacity Tray.
32. Fill out the New Equipment Condition Report.

2. REPLACEMENT AND ADJUSTMENT

- TRAY WIRE REPLACEMENT -



CAUTION: Unplug the tray power supply cord.

- Front Wire -

1. Remove the following parts:

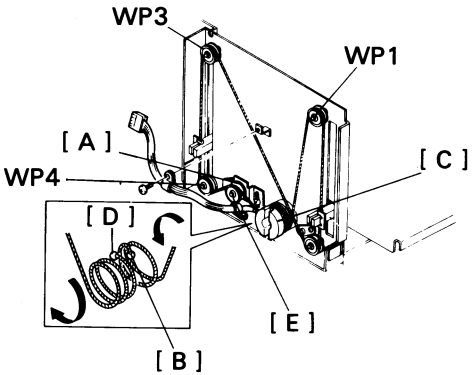
   1) Front cover (2 screws and 1 connector)
   2) Nylon clamp holding the operation board harness (1 screw)

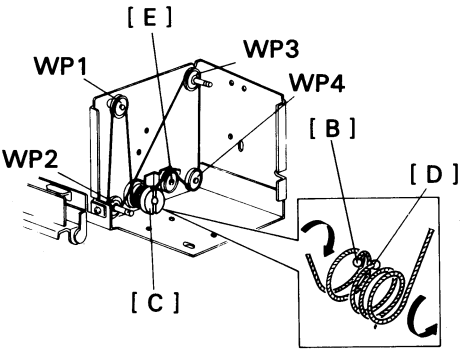
- Rear Wire -

1. Remove the LCT from the copier.

2. Remove the following parts:

   1) Rear cover (5 screws)
   2) Transformer assembly [A] with tray main board [B] (1 screw, 8 connectors, and 1 nylon clamp)
   3) Drive motor assembly [C] (2 screws and 1 connector)
   4) Ac power terminal [D] (2 screws and 1 ground wire)
   5) Safety switch assembly [E] (2 short screws)
   6) Safety switch actuator assembly [F] (2 E-rings)
   7) Shield plate [G] (4 screws)



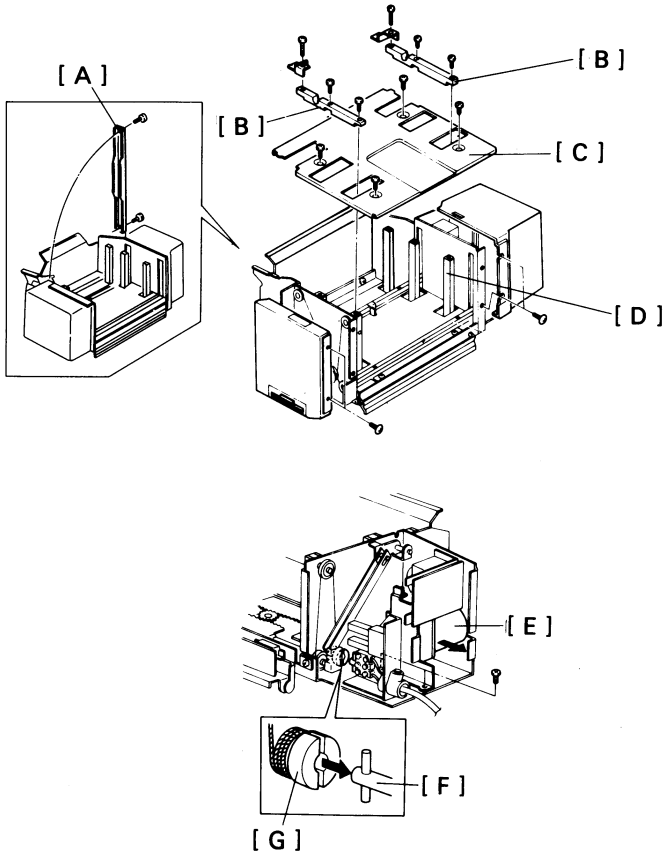


- Common Procedure for Front and Rear Wire -

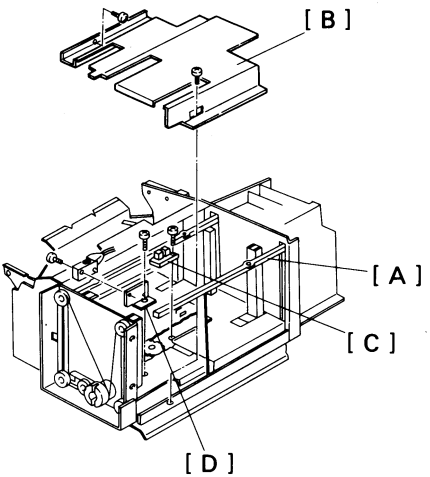
NOTE: The running directions for the front and rear wires are opposite.

1. Loosen the wire tightener [A] (1 screw).
2. Insert the bead [B] (unmarked) into the rear slot of the drive pulley.
3. Loop the wire around the drive pulley [C], as shown (one and a half turns).
4. Run the wire over WP1, WP2, WP3, and WP4 in turn while also placing the lift rod's ends in the braces.
5. Insert the bead [D] (red) into the other slot of the drive pulley.
6. Loop the wire around the drive pulley, as shown (two and a half turns).
7. Hook the wire on the tightener pulley [E].
8. Move the rods up and down manually to ensure that the drive wire does not overlap on the pulley.
9. Tighten the wire using the tightener (1 screw).
10. Reassemble.

- TRAY DOWN SENSOR AND POSITIONING SWITCH REPLACEMENT -

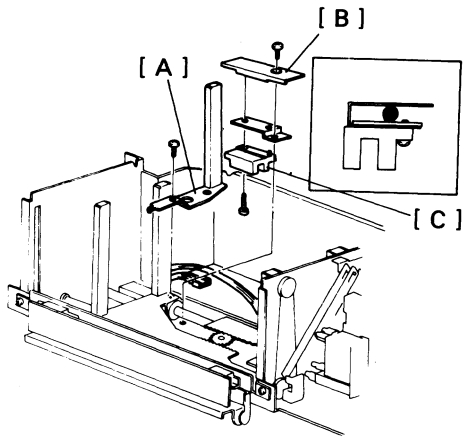


1. Open the side cover (1 screw).
2. Remove the top cover and rear cover (5 screws).
3. Remove the sensor bracket [A] (2 screws). (There is no need to disconnect the sensor connector.)
4. Remove the two post tops [B] (3 screws each).
5. Remove the tray bottom plate [C] (4 screws) taking care not to damage the 6 guide posts [D].
6. Move the tray drive motor assembly [E] (2 screws) to the rear to disengage the tray drive shaft [F] from the wire drive pulley [G].



7. Raise the lift rods [A].
8. Remove the front inner cover [B] (1 short and 1 long screw).
9. Replace the tray down sensor [C] (1 screw and 1 connector).
10. Rotate the paper size dial to a smaller size, such as A4R, and remove the positioning switch bracket [D] (1 screw).
11. Replace the positioning switch (2 screws).

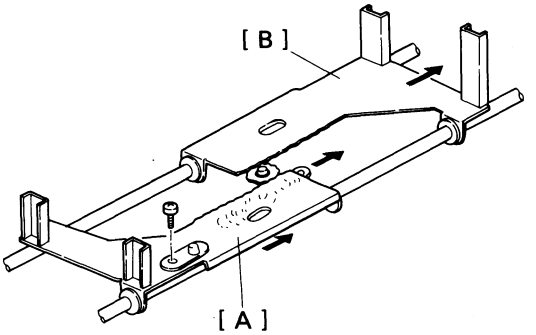
- PAPER SIZE SENSOR REPLACEMENT -



1. Do steps 1 to 8 of the tray down sensor and positioning switch replacement procedure.
2. Remove the front guide post [A] (1 screw and 1 hook).
3. Remove the paper size sensor bracket [B] (1 screw).
4. Replace the paper size sensor [C] (1 screw and 1 connector.)

NOTE: When installing the sensor bracket, make sure that the harness is positioned inside the sensor bracket.

- SIDE REGISTRATION ADJUSTMENT -



NOTE: Do not move the paper size dial while performing this adjustment.

1. Do steps 1 to 8 of the tray down sensor replacement procedure.
2. Loosen the 2 screws securing the pinion bracket [A].
3. Loosen the screw securing the guide post lock plate [B].
4. Move the pinion bracket while holding the pinion so that the pinion does not turn. (The front and rear guide posts must be equidistant from the center.)
5. Tighten the screws securing the pinion bracket.
6. Tighten the screws securing the guide post lock plates.
7. Confirm that the side registration is adjusted correctly and reassemble.

SECTION 8

EDITOR BOARD

CONTENTS

1. UNPACKING AND INSTALLATION

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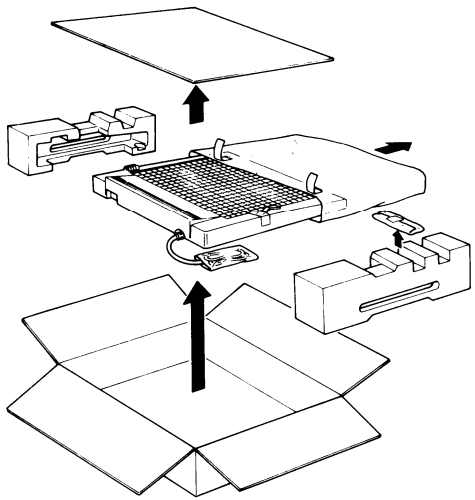
INSTALLATION PREPARATION	8- 3
INSTALLATION PROCEDURE ON A TABLE	8- 4
INSTALLATION PROCEDURE ON THE MACHINE	8- 5

1. UNPACKING AND INSTALLATION

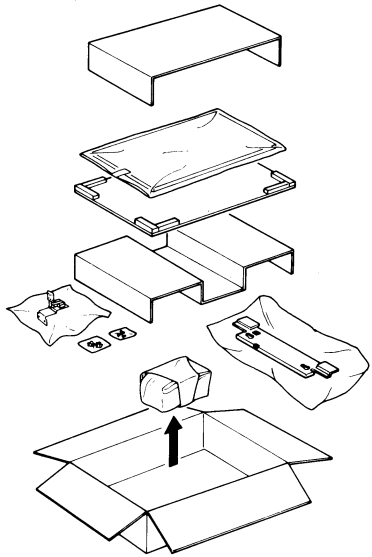
- ACCESSORY CHECK -



Check the quantity and condition of the accessories in the box according to the following list:

DESCRIPTION	Q'TY
1. Installation Procedure (115V - English only. 220V/240V - five languages)	1
2. New Equipment Condition Report	1
3. NECR Envelope (115V only)	1
4. Stylus Pen	1
5. Cover Plate (FT4480 only)	1
6. Lock Plate (220/240V only)	1
7. Clamp	1
8. Pan Head Screw (M4X8)	1

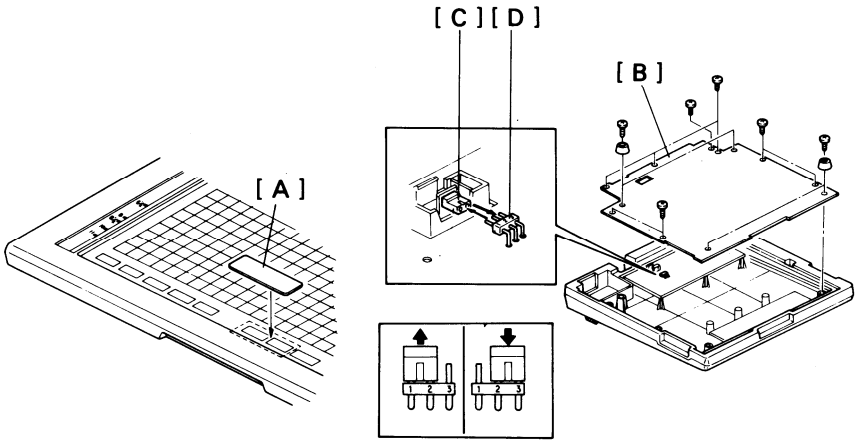
- INSTALLATION SET FOR RE 11 -



The installation set is required when using the editor as a platen cover. Open the box and check the parts according to following list:

	DESCRIPTION	Q'TY
1.	Pressure Sheet	1
2.	Left Hinge	1
3.	Right Hinge	1
4.	Pan Head Screw (M4 X 12)	12
5.	Harness Clamp	2
6.	Hinge Bracket (FT5560 - 115V only)	1
7.	Mounting Stud (FT5560 - 115V only)	2
8.	Pan Head Screw With Washer (M3 X 6) (FT5560 - 115V only)	2

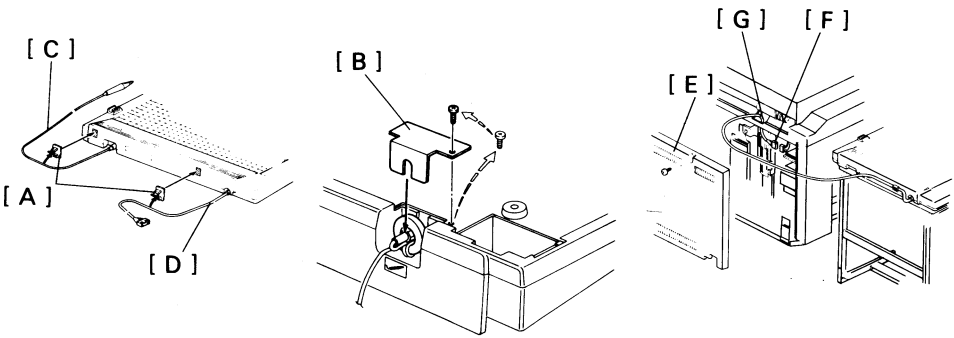
- INSTALLATION PREPARATION -



NOTE: As this copier does not have either the Save/Shift Image function or the Save/ Center Image function, the following procedure prevents the buzzer from sounding if the user mistakenly pushes the Save/Shift Image key or the Save/ Center Image key with the stylus pen.

1. Place the cover plate [A] over the Save/Shift Image key and the Save/Center Image key.
2. Remove the bottom plate of the editor [B] (12 screws).
3. Remove the shorting connector [C] from the connector [D] on the PCB.
4. Reinstall the shorting connector, as shown in the figure.
5. Reinstall the bottom plate.

- INSTALLATION PROCEDURE ON A TABLE -



NOTE: This procedure is required if ADF or platen cover is already installed on the machine.

1. Install the clamps [A] on the editor as shown in the figure.
2. Plug the stylus jack into the editor board as shown.
3. Remove the screw securing the bottom plate as shown and secure the lock plate [B] to the bottom plate.

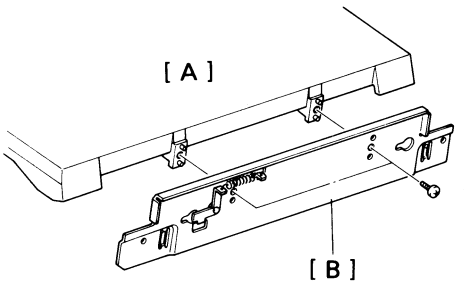
   NOTE: Step 3 is only required in the 220/240V machine.

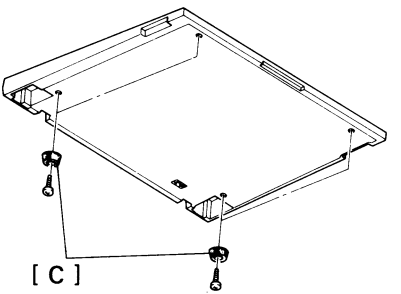
4. Secure the stylus pen harness [C] and connector harness [D] in the clamps.
5. Place the editor on a table.
6. Open the rear cover [E] (2 screws).
7. Connect the editor connector (8 pin) [F] through the docking hole [G] of the DF.

   NOTE: If the platen cover is installed on the machine, the connector should be connected through the cutout in the docking hole cap as shown in page 8-7.

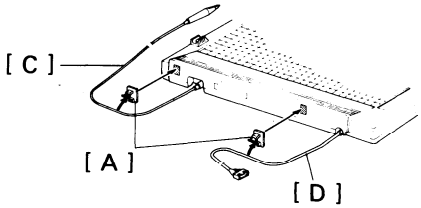
8. Clamp the editor harness to the main board bracket with the nylon wire clamp.
9. Reinstall the rear cover.
10. Check the operation of editor.
11. Fill out the New Equipment Condition Report.

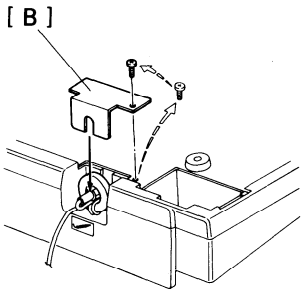
- INSTALLATION PROCEDURE ON THE MACHINE -

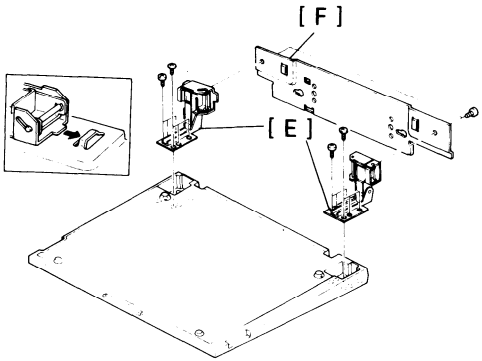




1. Remove the platen cover from the machine [A].
2. Remove the platen cover hinge bracket [B] from the platen cover.
3. Remove the foots [C] from the editor (4 screws).







4. Install the clamps [A] on the editor as shown in the figure.

5. Plug a stylus jack into the editor as shown.

6. Remove the screw securing the bottom plate as shown and secure the lock plate [B] to the bottom plate.

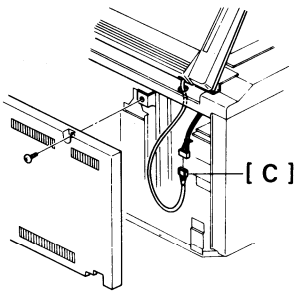
   NOTE: Step 6 is only required in the 220/240V machine.

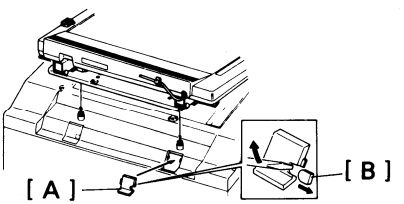
7. Secure the stylus pen harness [C] and connector harness [D] in the clamps.

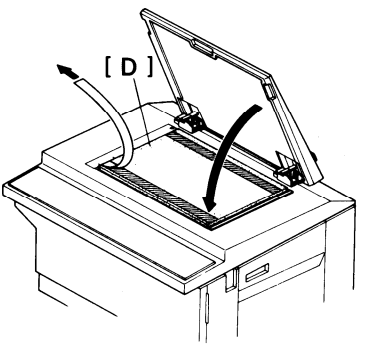
8. Install the hinges [E] on the editor (6 screws each).

9. Install the hinge bracket [F] on the hinges (2 screws).

   NOTE: Use the screws which secure the platen cover to the machine.







10. Remove the rear cover (2 screws) and remove the right docking hole cover [A].

11. Remove the cap [B] from the right docking hole cover using a small screw driver as shown in the figure.

12. Connect the editor connector (8 pin) [C] through the the docking hole and reinstall the docking hole cover on the copier.

13. Clamp the editor harness to the main board bracket with the nylon wire clamp then reinstall the rear cover.

14. Install the editor on the copier.

15. Put the pressure sheet [D] on the exposure glass so as to align the image area indicators.

16. Remove the tape seal.

17. Close the editor to complete the installation of the pressure sheet and the editor.

18. Check the operation of the editor.

19. Fill out the New Equipment Condition Report.

SECTION 9

TROUBLESHOOTING

CONTENTS

COPY QUALITY

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DEFECTIVE SENSOR TABLE 9-30

COPY QUALITY

White Spots

1. FIREFLY SPOTS

- Possible Causes -

- Developer too old
- Insufficient toner in developer
- Dirty seals around development unit

- Action -

Is there a small black spot in the center of the white spot?
Y N
| |
| Check and adjust the doctor gap (0.90 mm).

Is the image density too light?
Y N
| |
| • Clean the ends of the development roller.
| • Replace the developer and the side seals.

Correct the light copy condition. Refer to “Light Copy” section.

2. SMALL SPOTS

- Possible Causes -

- Dirty corona wire.
- Incorrect corona current

- Action -

Perform drum conditioning. If that does not solve the problem, check whether the charge corona current is correct?
Y N
| |
| Adjust the charge corona current.

Clean the transfer corona wire and adjust the transfer current.

3. DIRTY BACKGROUND AROUND WHITE SPOTS

- Possible Causes -

- Condensation on the drum due to rapid temperature change. This phenomenon may occur early on winter mornings.

- Action -

The problem should disappear after about 20 copies. If it does not, perform drum conditioning.

HAT IMAGE

- Possible Causes -

- Defective quenching lamp
- Charge corona wire miscounted
- Incorrect corona current
- Old developer

- Action -

Does the quenching lamp turn on?
Y N
| |
| Does CN203-8 drop from +24 volts to ground?
| Y N
| | |
| | • Check the connector and harness.
| |
| Replace the quenching lamp.

Is the charge corona wire properly installed?
Y N
| |
| • Install the charge corona wire correctly.
| • Replace any defective parts.

Is the charge corona current correct?
Y N
| |
| Adjust the charge corona current.

Replace the developer.

BLANK AREA OR PATCHY IMAGE

- Possible Causes -

- Uneven PTC, transfer, or separation coronas.

- Action -

Are the PTC, transfer, and separation corona wires improperly installed?
Y N
| |
| Clean the PTC, transfer, and separation corona wires and adjust the corona currents.
|
Clean and reset the wire(s).

UNFUSED COPY

IMAGE CAN BE EASILY RUBBED OFF

- Possible Causes -

- Thermistor malfunction
- Very low early morning temperatures.
- Copy paper has a very rough surface.

- Action -

Does the problem occur only early in the morning?
Y N
| |
| Is the thermistor dirty or damaged?
| Y N
| | |
| | Increase fusing temperature using SP mode 49. If the problem still occurs, increase fusing pressure.
| |
| Clean or replace the thermistor.
|
Select the fusing idling mode using SP mode 29.

JITTER

- Possible Causes -

- Vibration in drive mechanism
- Scanner not moving smoothly

- Action -

Does jitter appear at the leading edge of copies?

Y N

Y: Does the interval of jitter change when making reduced copies?

Y N

Y: Check the main drive belt. Replace the tensioner spring if it is stretched.

N: Clean the scanner guide rods; then, apply a small amount of Launa oil to the lubricant pad (if dry).

Is the scanner wire tension correct?

Y N

N: Rehook the tension spring or replace it if stretched.

Y: Check all mechanical parts for incorrect operation.

HOLLOWING OUT

1. CENTER OF SOLID BLACK AREAS IS HOLLOW

- Possible Causes -

- Damp paper
- Incorrect transfer or separation corona current.

- Action -

Is the paper damp?
Y N

- Clean the PTC and T/S corona wires.
- Check and adjust the transfer and separation corona currents.

Replace the damp paper with fresh paper.

VERTICAL WHITE LINES OR BANDS

1. LINES 80 mm APART

- Possible Causes -

- Damaged pick-off pawls
- Pick-off mechanism malfunction

- Action -

Does the pick-off pawl mechanism work correctly?
Y N

Correct or replace any defective parts.

Are the pick-off pawls damaged?
Y N

Replace the drum

Correct or replace the pick-off pawls, and replace the drum.

2. Straight Sharp Lines

- Possible Causes -

- Drum scratched
- Cleaning blade damaged
- Cleaning brush worn
- Hot roller scratched
- Hot roller strippers worn

- Action -

Start a copy cycle and stop it before the copy reaches the fusing unit. Do the same lines exist on the unused copy?

Y N

If the surface of the hot roller is scratched, which part is scratching the hot roller surface?
- Oil Blade
- Hot Roller Strippers
- Other

Clean, correct, and/or replace any parts which scratch the hot roller. If the hot roller strippers are badly stained with toner, check and adjust the fusing temperature. Then, replace the hot roller.

Is the drum scratched?

Y N

Follow troubleshooting section "Uneven Density 1) Uneven density appears in bands."

Correct or replace any parts scratching the drum surface.
- Cleaning entrance seal--wavy, bent, burrs
- Cleaning brush
- Brush seals which contact the drum

Are there any foreign substances around the drum that may cause leaking of the drum potential?

Y N

- Clean the edge of the cleaning blade. Check that the movement of the blade cleaner is smooth and the cleaner edge is straight.
- Clean all seals.

Remove the foreign substances.

3. FUZZY LINES OR BANDS

- Possible Causes -

- Dirty corona wire
- Dirty brush seals

- Action -

Clean the charge, transfer, and PTC corona wires.

Clean all brush seals that contact the drum.

UNEVEN DENSITY

1. IMAGE DENSITY GRADUALLY CHANGES ACROSS THE COPY

- Possible Causes -

- Charge corona wire height not even
- Charge corona wire dirty
- Doctor gap not even

- Action -

Does the darker area follow the image when making reduced copies?
Y N

Y:
- Clean the charge corona wires. Are the charge corona wires incorrectly positioned in the wire cleaner and end block?
  - Y:
    - Is the charge corona current uneven across the drum?
      - Y: Clean the transfer corona unit.
      - N: Adjust the charge corona current and wire height.
  - N: Position the wires correctly.

If the problem still exists, check and adjust the doctor gap.

N:

Are any of the optics parts stained?
- Toner Shield Glass
- Exposure Glass
- Mirrors, Lens, Reflectors

Y:
- Is the exposure lamp stained black?
  - Y: Correct uneven exposure using the adjusting plates.
  - N: Replace the exposure lamp.

N: Clean them.

2. UNEVEN DENSITY APPEARS IN BANDS.

- Possible Causes -

- Exposure lamp misaligned
- Dirty quenching lamp
- Dirty corona wire
- Incorrect corona current

- Action -

Does the darker area move with the image when making reduced copies?
Y N

Y:
- Clean the charge corona wire.
- Check and adjust the charge corona current. Make sure it is even across the drum.
- Clean the quenching lamp.
- Clean the transfer corona wire.
- Clean the erase unit.

Are any of the following parts stained or dirty?
- Toner Shield Glass
- Exposure Glass
- Mirrors, Lens, Reflectors

Y N

Y: Clean them.

N: Is the exposure lamp stained?
Y N

Y: Replace the exposure lamp.

N: Correct using the adjusting plates. Does the problem still exist?
Y

Y: Align the filament of the exposure lamp.

ABNORMAL IMAGE DENSITY

1. IMAGE DENSITY IS TOO HIGH OR TOO LOW

- Possible Causes -

- Incorrect charge corona current
- ID sensor malfunction

- Action -

Check the output voltage of the ID sensor using SP mode 55. Is the voltage correct?
Y N

Y: Check and adjust the charge corona current.

N: Adjust the voltage so that it is within standard.

If the image density is too light, use SP mode 60 to supply toner.

VERTICAL BLACK LINES OR BANDS

1. WAVY LINES

- Possible Causes -

- Dust between the cleaning blade and drum
- Edge of the cleaning blade deformed
- Insufficient cleaning pressure
- Cleaning mechanism not working properly

- Action -

Clean the edge of the cleaning blade. Do the lines still exist or do they reappear after a short time?
Y

Y: Is the stroke of the cleaning solenoid plunger 4 mm?
Y N

Y: Check the cleaning pressure mechanism. Do all parts move properly?
Y N

N: Adjust the stroke of the cleaning solenoid.

Correct or replace any defective parts and check operation again.

Is the edge of the cleaning blade deformed?
Y N

Slightly increase the cleaning pressure.

Replace the cleaning blade.

---

2. DOTTED LINES OR BANDS

- Possible Causes -

- Pick-off pawl mechanism malfunction
- Scratched drum

- Action -

Do the pick-off pawls swing properly?
Y N

Correct or replace the pick-off pawls, and replace the drum.

Is the gap between the drum and pick-off pawls incorrect (1 to 2 mm)?
Y N

- If the pick-off pawl mechanism does not work properly, correct or replace any defective parts.
- If the drum is scratched, correct the condition that caused the scratch; then, replace the drum.

Adjust the gap, and replace the drum.

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3. LINE OR BAND APPEARS AT THE REAR EDGE OF THE COPY (A3 or 11" x 17")

- Possible Cause -

- Toner shield glass mismounted

- Action -

Set the toner shield glass properly.

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4. STRAIGHT LINES OR BANDS

- Possible Causes -

- Hot roller scratched
- Insufficient silicone oil
- Cleaning blade damaged
- Drum scratched

- Action -

Do the lines move with the image when making reduced copies?

Y N

Start a copy cycle and stop it just before the paper reaches the fusing unit. Then, check if the unused copy has the same lines on it?

Y N

If the hot roller surface is scratched, clean, correct, or replace any parts scratching the surface?

- Oil Blade
- Hot Roller Strippers

Note: If the hot roller strippers are badly toner stained, check and adjust the fusing temperature. Replace the hot roller. Check silicone oil level.

Is the drum scratched?

Y N

If you cannot solve the problem by following trouble shooting "Uneven Density 2. Uneven density appears in bands", clean the edge of the cleaning blade. Make sure the blade cleaner moves smoothly, and the cleaner edge is straight.

Determine what scratched the drum and correct it (perhaps the pick-off pawls), and replace the drum.

Refer to "Vertical White Lines 2) Straight sharp line(s)".

5. LINES AT IRREGULAR INTERVALS

- Possible Causes -

- Deformed cleaning blade scraper
- Toner clogged in cleaning unit

- Action -

Is toner clogged in the cleaning unit?
Y N

Y: Check the cleaning blade scraper.
- Is it straight?
- Does it contact the cleaning blade properly?
- Does it move correctly?

Y N

N: Correct or replace any defective parts.

- Clean the cleaning unit. Check the toner collection coil; replace it if damaged.
- Check RA3. Make sure the cooling fan operates properly.

BLACK SPOTS AT THE LEADING EDGE

- Possible Cause -

- Separation corona wire mismounted

- Action -

Is the separation corona wire properly installed?
Y N

N: Clean the separation corona wire and T/S corona unit.

If the separation corona current is incorrect, clean the separation corona wire and adjust the separation corona current.

DIRTY BACKGROUND

1. DIRTY BACKGROUND ON ENTIRE COPY IMAGE

- Possible Causes -

- Dirty corona wire
- Toner supply clutch malfunction
- Incorrect lamp regulator output
- Dirty drum and bias thermistors
- Inefficient drum cleaning
- Incorrect corona current
- Drum worn out

- Action -

Note: When the problem occurs after the drum conditioning, make several white copies or cycle the development unit for 2 minutes using free run.

Make a reduced copy with A3/11" x 17" paper. Does the dirty background appear in the erased areas?

Y N

- Clean the drum thermistor and bias thermistor surfaces.
- Clean the charge corona wire.
- Clean the optics.

If the problem was not resolved, adjust the lamp regulator output.

If the problem still exists, check and adjust the charge corona current.

o Clean the erase unit.
o Clean the drum heater thermistor and bias thermistor surfaces.

Do wavy lines occur with the dirty background?

Y N

Does the toner supply clutch turn off?

Y N

Is the toner supply solenoid (CN230-3, -4) continuously supplied with +24 volts

Y N

Check/replace the dc power supply and/or the main board.

Clean or replace the toner supply clutch.

- Check and adjust the charge corona current.
- Clean or replace the cleaning brush.

- Clean the edge of the cleaning blade.
- Check that the edge of the blade scraper is straight and that its movement is smooth. If not, correct or replace any defective parts.

If the problem still exists, one of the following should solve it.

- Replace the cleaning blade.
- Check the quenching lamp; replace if necessary.
- Replace the drum.

BLANK COPY

- Possible Causes -

- Charge corona wire mismounted or broken
- Defective power pack
- Defective main board

- Action -

Is there a faint image?
Y N

Y:
- Is the charge corona wire (or unit) incorrectly installed?
  Y N

  Y:
  - Reset the charge corona wire (or unit).

  N:
  - Does the main board output the correct signal to the power pack (CN206-A22 drops from +24 volts to ground)?
    Y N

    Y:
    - Clean the charge corona unit and remove any foreign substances that might cause a leak.
    - If the problem still exists, replace the charge power pack.

    N:
    - Replace the main board.

Does the density gradually drop when making copies?
Y N

Y:
- Is the transfer corona wire (unit) incorrectly installed?
  Y N

  Y:
  - Reset the transfer corona wire (unit).

  N:
  - Does the main board output the proper T/S trigger signals?
    Y N

    Y:
    - Replace the transfer corona power pack.

    N:
    - Replace the main board.

N:
- Check the development drive mechanism and clean or replace any defective parts.

LIGHT COPY

- Possible Causes -

- Development bias not applied or defective bias power pack
- Defective main board
- Defective dc power supply

- Action -

Does the image density change with ID selection?

Y N

Is the development bias applied?

Y N

Does the bias power pack receive the proper trigger signal from the main board?

Y N

Replace the main board.

Check for electrical continuity between the bias terminal and the development sleeve. Correct any poor contact or faulty wiring. If that isn't effective, replace the bias power pack.

Does the toner supply clutch work properly?

Y N

Does CN230-4 drop from +24 volts to ground?

Y N

Does CN202-A7 go from +24 volts to ground?

Y N

Replace the main board.

Replace the paper feed relay board.

Clean or replace the toner supply clutch.

Other possible causes:

1. Charge corona
2. Transfer corona
3. Development drive mechanism

PAPER CREASING

- Possible Causes -

- If thin copy paper is used, the leading edge may not set correctly between the fusing rollers, resulting in creased copies.
- Paper curl

- Action -

Is thin paper used frequently?
Y N
| |
| Move the fusing entrance guide to the upper position.

If the paper is curled, reduce fusing pressure. If this does not solve the creasing problem, instruct the customer to correct the paper curl before copying.

MULTIFEED AND MISFEED

- Possible Causes -

- Incorrect friction between the feed pad and feed roller
- Very thin or very thick paper is being used

- Action -

Is the gap between the friction pad and feed roller 1.6 ± 0.3 mm?
Y N
| |
| Adjust the friction pad/feed roller gap.

Do the feed problems occur mostly with the cassette tray?
Y N
| |
| • If multifeeds are common, decrease the friction pad/feed roller gap slightly to increase feed friction.
| • If misfeeds (feed failure) are common, increase the friction pad/feed roller gap slightly to decrease feed friction.
| • If the customer uses special paper frequently, adjust the friction at one feed station to match the special paper. Instruct the user to use only that station to copy the special paper.

Adjust the friction pad holder position.

If the above measures do not solve the problem, replace the feed roller and friction pad.

SERVICE CALL CONDITIONS

11 EXPOSURE LAMP MALFUNCTION

- Possible Causes -

- Exposure lamp turns on while in standby condition.
- Exposure lamp circuit open (lamp filament broken)
- Cooling fan malfunction

- Action -

Does the cooling fan work?
Y N

Y: Check the cooling fan circuit. Replace the cooling fan if it is defective.

Turn the main switch off and on. Does SC 11 remain off?
Y N

Y:
- Replace the exposure lamp if the exposure lamp circuit is open.
- Replace the lamp regulator if the exposure lamp circuit is not open.

Press the Start key. Does lamp trigger (CN204-9) go from +24 V to 0 V?
Y N

Y: Replace the main board.

Replace the lamp regulator.

21 SCANNER HOME POSITION SENSOR NOT ON

- Possible Causes -

- Scanner does not move to home position at power on.
- Home position sensor failure

- Action -

Move the scanner away from the home position. Turn the main switch off and on. Does the scanner move to the home position.

Y N

| Check/repair the scanner drive mechanism.

Manually activate the home position sensor. Does CN101-B5 go from LOW to HIGH?

Y N

| Replace the home position sensor.

Replace the main board.

23 NO REGISTRATION START SIGNAL

- Possible Causes -

- Optics control circuit failure (no registration signal)

- Action -

Replace the main board. If the problem still exists, check the scanner drive motor.

24 NO SCANNER HOME POSITION SIGNAL

- Possible Causes -

- Scanner does not return to home position within 20 seconds after scanner start.
- Optics control circuit failure.
- Scanner home position sensor failure.

- Action -

Does the scanner return to the home position within 20 seconds after scanning starts?
Y N
| |
| Check/repair the scanner drive mechanism.
|
Does CN101-B5 stay HIGH when the scanner leaves the home position?
Y N
| |
| Replace the main board.
|
Check the scanner home position sensor circuit. Replace the scanner home position sensor if necessary.

28 LENS HOME POSITION SENSOR NOT ON

- Possible Causes -

- Lens does not move properly.
- Lens home position sensor failure

- Action -

Does the lens move smoothly?
Y N

Y: Test the lens home position sensor. (Does CN101-B1 stay LOW?) Replace it if defective.

N: Check/repair the lens drive mechanism.

If the above does not work, replace the main board.

29 LENS HOME POSITION SENSOR NOT OFF

- Possible Causes -

- Lens does not move properly.
- Lens home position sensor failure

- Action -

Does the lens move smoothly?
Y N

Y: Test the lens home position sensor. (Does CN101-B1 stay HIGH?) Replace it if defective.

N: Check/repair the lens drive mechanism.

If the above does not work, replace the main board.

2A 2ND SCANNER HOME POSITION SENSOR NOT ON

- Possible Causes -

- Second scanner drive doesn't work properly
- Second scanner home position sensor failure

- Action -

Check the action of the second scanner drive mechanism. Does it move correctly?

Y N

| Check/repair the lens drive mechanism.

Test the 2nd scanner home position sensor. (Does CN101-B2 stay LOW?) Replace it if defective.

If the above does not work, replace the main board.

2B 2ND SCANNER HOME POSITION SENSOR NOT OFF

- Possible Causes -

- Second scanner drive doesn't work properly
- Second scanner home position sensor failure

- Action -

Check the action of the second scanner drive mechanism. Does it move correctly?

Y N

| Check/repair the lens drive mechanism.

Test the 2nd scanner home position sensor. (Does CN101-B2 stay HIGH?) Replace it if defective.

If the above does not work, replace the main board.

2C SCANNER MOTOR TOO FAST

- Possible Causes -

- Scanner motor control circuit failure

- Action -

Replace the main board.

2D SCANNER MOTOR TOO SLOW

- Possible Causes -

- Scanner motor control circuit failure

- Action -

Replace the main board.

31 DRUM THERMISTOR

- Possible Causes -

- Drum thermistor circuit open
- Drum thermistor circuit short

- Action -

Is the input at CN203-17 less than 0.14 volts?
Y N
| |
| Is the input at CN203-17 about 5 volts?
| Y N
| | |
| | Replace the main board.
Replace the erase unit.

32 IMAGE DENSITY SENSOR

- Possible Causes -

- PTL not set
- Dirty ID sensor
- ID sensor circuit failure

- Action -

Clean the ID sensor and reset the PTL unit.

If the problem still exists, check the input at CN203-5. Is it less than 1.0 volt?

Y N

Y: Replace the PTL unit.

N: Replace the main board.

41 3RD CASSETTE TRAY LIFT MOTOR

- Possible Causes -

- Lift motor stays on longer than 20 seconds.

- Action -

Is CN228-5 +5 volts when the cassette tray lift sensor is activated?

Y N

Y: Check the lift sensor circuit. Replace the lift sensor if necessary.

Is CN202-B11 +5 volts when the cassette tray lift sensor is activated?

Y N

Y: Check whether CN202 and CN220 are connected properly. If they are, replace the paper feed relay board.

N: Replace the main board.

53 FUSING THERMISTOR ABNORMAL

- Possible Causes -

- Thermistor failure (The input at CN206-B1 is less than 0.5 V.)

- Action -

Replace the fusing thermistor.

54 FUSING WARM-UP FAILURE

- Possible Causes -

- Fusing lamp blown
- Thermistor circuit open

- Action -

SC 54 turns on if the hot roller does not reach 150°C within 8 minutes after the power relay turns on.

Is the fusing lamp filament broken?
Y N
| |
| Is the thermistor circuit open?
| Y N
| | |
| | Check the thermistor. Make sure it is mounted properly and in good contact with the hot roller.
| |
| Replace the thermistor.
|
Replace the fusing lamp.

55 FUSING OVERHEAT

- Possible Causes -

- Thermistor failure (CN206-B1 < 0.5 V)

- Action -

Replace the thermistor.

56 FUSING TEMPERATURE TOO LOW

- Possible Causes -

- Fusing lamp blown
- Thermistor failure

- Action -

SC 56 turns on if the hot roller temperature drops below 150°C after warmup is complete.

Is the fusing lamp blown?
Y N
| |
| Replace the thermistor.
|
Replace the fusing lamp.

61 PULSE GENERATOR ABNORMAL

- Possible Causes -

- Main drive malfunction
- Pulse generator sensor failure

- Action -

SC 61 lights if the main board does not receive a pulse at CN206-A9 for longer than 1.8 seconds.

Is the main drive mechanism working properly.
Y N
| |
| Check/repair all parts of the main drive mechanism. (motor, timing belt, etc.)
|
Repair or replace the pulse generator.

91 TOTAL COUNTER MALFUNCTION

- Possible Causes -

- Total counter does not cycle

- Action -

Is +5 V supplied at CN103-5?
Y N
| |
| Replace the operation panel.

Is +24 V supplied at CN103-4?
Y N
| |
| Is there +24 V at CN103-?? of the main board?
| Y N
| | |
| | Check the Vaa power supply. Replace the dc power supply if it is not correct. Replace the main board if Vaa is all right.
| |
| Replace the operation panel.
|
Does CN103-5 pulse from +5 V to 0 V at the start of the copy cycle?
Y N
| |
| Replace the total counter.
|
Replace the operation panel. If the problem still exists, reinstall the operation panel and replace the main board.

93 OPTICS ←→ MAIN COMMUNICATION FAILURE

- Possible Causes -

- Data communication error between the main control circuit and the optics control circuit.

- Action -

Replace the main board.

ID SENSOR ABNORMAL (no SC number)

- Possible Causes -

- Dirty ID sensor or ID sensor failure

- Action -

If Vsg becomes less than 2.5 volts, the SC indicator lights but no number is displayed. The copier shifts to fixed toner supply mode.

Clean the ID sensor.

If the problem still exist, replace the PTC unit.

If the problem still exists, the ID control circuit must be bad; so, replace the main board.

DEFECTIVE SENSOR TABLE

No.	Name	Condition	Problem
S1	Lens Home Position	Open	Lights SC NO. 29 when the main switch is turned on.
		Short	Lights SC No. 28 when the main switch is turned on.
S2	Pulse Generator	Open	Lights SC No. 61 during the copy cycle.
		Short	Same as open condition.
S3	Toner End	Open	The CPU never detects toner end condition.
		Short	Lights “Add Toner” indicator even when enough toner is present.
S4	Manual Feed	Open	Lights “Manual Feed” indicator even when the manual feed table is closed.
		Short	Never lights “Manual Feed” indicator and the manual feed mode does not works.
S5	Color Toner	Open	“Color Toner” does not turn on when there is a color development unit in the machine.
		Short	Lights “Color Toner” indicator when the main switch is turned on.
S6	First Paper End	Open	Lights “Load Paper” indicator even when paper is present.
		Short	Never lights “Load Paper” indicator even when paper is not present.
S7	Second Paper End	Open	Same as S6.
		Short	Same as S6.

No.	Name	Condition	Problem
S8	First Paper Size	Open	Displays incorrect paper size.
		Short	No cassette in place condition is detected if all sensors are shorted.
S9	Second Paper Size	Open	Same as S8.
		Short	Same as S8.
S10	Registration	Open	Paper always jams at the registration roller.
		Short	Lights “Check Paper Path” indicator when the main switch is turned on.
S11	Third Paper Size	Open	Same as S8.
		Short	Same as S8.
S12	Paper Exit	Open	Lights “Check Paper Path” indicator when the main switch is turned on.
		Short	Same as open condition.
S13	Second Scanner Home Position	Open	Lights SC No. 2b 3 seconds after the main switch is turned on.
		Short	Lights SC No. 2A 0.3 seconds after the second scanner motor is turned on.
S14	Scanner Home Position	Open	Lights SC No. 21 when the main switch is turned on.
		Short	Lights SC No. 24 when the main switch is turned on.

No.	Name	Condition	Problem
S15	Cassette Tray	Open	Never lights “Paper Size” indicator even when the cassette tray is installed.
		Short	Lights “Paper Size” indicator even when the cassette tray is not installed.
S16	Third Paper End	Open	Same as S6.
		Short	Same as S6.
S17	Toner Overflow	Open	Never detects used toner bottle full condition.
		Short	Lights “Used Toner Bottle” indicator even when the used toner bottle is not full condition.
S18	Oil End	Open	Never detects low oil condition.
		Short	Lights “Add Oil” indicator even when there is enough oil.
S19	Cassette Tray	Open	Cassette bottom plate never lifts up. “Load Paper” lights.
		Short	Same as open condition.